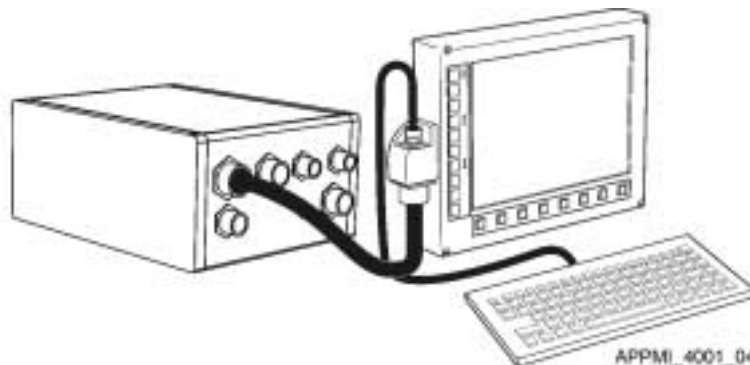TECHNICAL MANUAL

UNIT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
FOR

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW (FBCB2) (VERSION 3.5.4 DRAFT) COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2
(EIC NA)

APPMI_4001_04

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DESTRUCTION NOTICE – Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

HEADQUARTERS, DEPARTMENT OF THE ARMY

28 JUNE 2002

WARNING SUMMARY

SAFETY SUMMARY GENERAL SAFETY PRECAUTIONS

For safety precautions during the maintenance of electrical/electronic equipment see TB 385-4 (Army).

For care and handling of electronics equipment see TM 43-0158 (Army).

FBCMI_4006_01

SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK:

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL WITH BARE HANDS.
2. IF POSSIBLE, TURN OFF THE ELECTRICAL POWER.
3. IF YOU CAN NOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL.
4. SEND FOR HELP AS SOON AS POSSIBLE.
5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF THE ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START CARDIOPULMONARY RESUSCITATION (CPR).

WARNING

NiMH internal hold-up batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

Backlights in the display may break and leak Mercury and Lead. If Mercury and Lead are exposed, avoid contact with skin, eyes, and clothes, and don't breathe vapors. Immediately contact the proper authorities so that the spillage can be properly removed and if necessary, appropriate medical aid is administered. Dispose of Mercury and Lead IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING SUMMARY–Continued

WARNING

Lithium Carbon Monofluoride Complimentary Metal-Oxide Semi-Conductor (CMOS) button-cell internal back-up battery may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

Processor Units with internal Light Emitting Diodes (LED) diagnostic displays contain 9-volt non-rechargeable lithium batteries located in battery trays. Batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

The internal display inverters operate at high voltages. Electrical shock may occur and cause injury to personnel and/or death. Do not disassemble the display.

WARNING

When handling the Removable Hard Disk Drive Cartridge (RHDDC) wait at least 10 seconds after Processor Unit is Powered down, to allow the disk to stop spinning, before removing the RHDDC. The RHDDC can be hot. Burns may result. Allow RHDDC to adequately cool or use gloves prior to removing from Processor Unit.

WARNING

Inspect cables to ensure that they are properly dressed and stowed to prevent trip and snag hazards or damage to equipment.

WARNING SUMMARY–Continued

WARNING

Vehicle Specific For HEMTT, HMMWV Ambulance, FMTV/LMTV:
Display may obstruct view of windshield and right side window. Maximize driver field-of-view prior to
vehicle operation.

WARNING

Vehicle Specific For M35 2.5 Ton Truck, All HMMWV's variants, (except 1031, Ambulance,and
Avenger):
FBCB2 display may obstruct the view of the front windshield and side mirror. Align display with
A-Pillar prior to vehicle operation.

WARNING

M93A1 Fox, M113 Mid, M113 A3, FAASV Trip Hazard, disconnect keyboard cable when stowed.

WARNING

All HMMWV variants, Fieldworks, Ace, M548 Volcano, HET, M93A1 Fox, HEMTT,2.5 Ton Truck,
5-Ton Truck, DEUCE Drivers viewing display while operating vehicle may result in personnel haz-
ards/equipment damage. Drivers should not view display unit while vehicle is in motion, unless
otherwise dictated by Standard Operating Procedures (SOP) unique to that platform.

WARNING

Vehicle Specific For M998/M1025/M1026/M1038:
FBCB2 display may obstruct the view of the front windshield and side mirror. Align display with
A-Pillar prior to vehicle operation.

WARNING SUMMARY–Continued

WARNING

Vehicle Specific For M93A1 Fox:
Trip Hazard. - Disconnect keyboard cable when stowed.
Do not disconnect or connect any cables without first properly powering down the system including the PLGR and turning off all power. Always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

WARNING

Vehicle Specific For All HMMWV variants, Ace, M548 Volcano, HET, M93A1 Fox, HEMTT, 2.5 Ton Truck, 5-Ton Truck:
Drivers viewing display while operating vehicle may result in personnel hazards/equipment damage. Drivers should not view display unit while vehicle is in motion, unless otherwise dictated by Standard Operating Procedures (SOP) unique to that platform.

WARNING

Vehicle Specific For M548 A3 Volcano:
Drivers viewing display while operating vehicle may result in personnel hazards/equipment damage. Drivers should not view display while vehicle is in motion unless otherwise dictated by Standard Operating Procedures (SOP) unique to that platform.

CHANGE
NO. 0

HEADQUARTERS, DEPARTMENT OF THE ARMY
WASHINGTON, DC, 28 JUNE 2002

TECHNICAL MANUAL

UNIT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
FOR
FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)
NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2
(EIC NA)

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TM 11-7010-326-20&P, 28 June 2002, is updated as follows:

1. Original.

LIST OF EFFECTIVE PAGES/WORK PACKAGES

NOTE: The portion of text affected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages / work packages are:

Original ..0 ..28 June 2002

TOTAL NUMBER OF PAGES FOR FRONT AND REAR MATTER IS 13 AND TOTAL NUMBER OF WORK PACKAGES IS 26 CONSISTING OF THE FOLLOWING:

Page / WP No.	*Change No.	Page / WP No.	*Change No.	Page / WP No.	*Change No.	Page / WP No.	*Change No.
WP 0001 00	0						
WP 0002 00	0						
WP 0003 00	0						
WP 0004 00	0						
WP 0005 00	0						
WP 0006 00	0						
WP 0007 00	0						
WP 0008 00	0						
WP 0009 00	0						
WP 0010 00	0						
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WP 0024 00	0						
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* Zero in this column indicates an original page or work package

TECHNICAL MANUAL

UNIT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)
NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2
(EIC NA)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander: US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-LM-LEO-E-ED-P, Fort Monmouth, New Jersey 07703-5000. The fax number is 732-532-1413, DSN 992-1413. You may also e-mail your recommendations to AMSEL-LC-LEO-PUBS-CHG@cecom3.monmouth.army.mil. In either case a reply will be furnished to you.

HEADQUARTERS, DEPARTMENT OF THE ARMY

28 JUNE 2002

TABLE OF CONTENTS

HOW TO USE THIS MANUAL

This Unit Level Technical Manual contains the information required to remove and replace each of the major subassemblies. The companion Technical Bulletin TB 11-7010-326-20, contains the information required to remove and replace the cables and attaching hardware. The equipment consists of the AN/UYK-128(V) Computer with the following Government Furnished Equipment (GFE):

  Single Channel Ground and Airborne Radio System Advanced System Improvement Program (SINCGARS ASIP)
  The Enhanced Position Location Reporting System (EPLRS).
  The Precision Lightweight GPS Receiver (PLGR).
  The Router (also known as the Internet Controller (INC))

This Technical Manual can be used to perform installation and removal of the major FBCB2 components. The Repair Parts and Special Tools List (RPSTL) helps to identify replacement parts when necessary.

The companion Technical Bulletin TB 11-7010-326-20, contains information to identify location information for each platform in Appendices A through AF.

TM 11-7010-326-20&P provides information to test and troubleshoot system failures and removal/replacement instructions for FBCB2 equipment once the failure has been isolated. TB 11-7010-326-20, Appendices A through AF provide removal/replacement instructions for platform-specific hardware. This includes vehicle-specific assembly part numbers, location, and mounting.

UNIT MAINTENANCE

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA

GENERAL INFORMATION

SCOPE

Figure 1 depicts the Digital Computer Set, AN/UYK-128 (V)1. The 10.4" display with any set of the other components constitutes a (V)1. The 12.1" display with any set of the other components constitutes a (V)2. A third display has the case size of the 10.4" display but a screen size of 12.1" display and therefore is considered (V)1 & (V)2. Figure 2 depicts the AN/UYK-128(V)2 version. The location of the Computer components, and the cable complement is different for each host platform. The basic components Display Unit (DU), Processor Unit (PU), and Keyboard Unit (KU) are interchangeable. Therefore, any PU may be combined with any DU and be programmed with any KU.
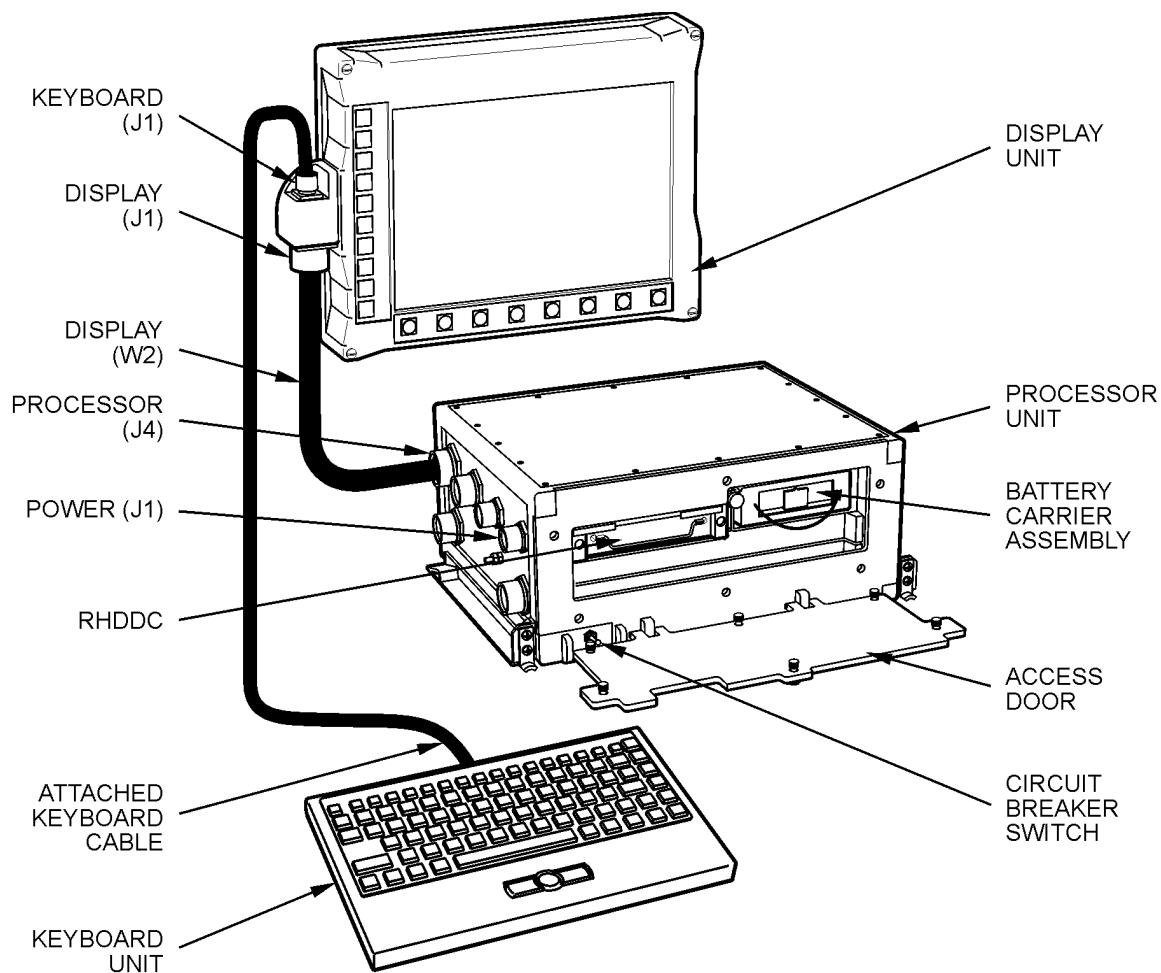
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Figure 1 **Typical AN/UYK-128(V)1 Configuration**

SCOPE–Continued
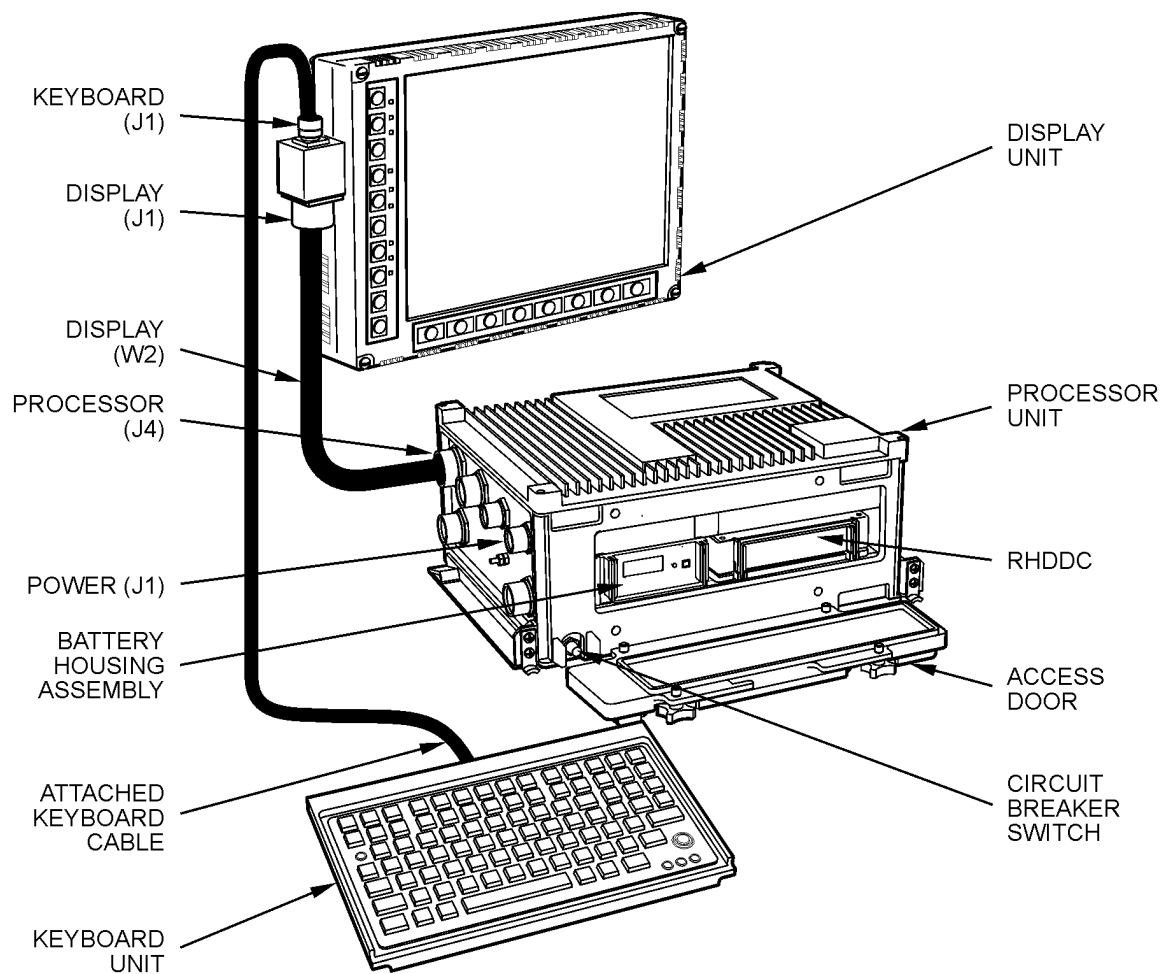
Figure 2   **Typical AN/UYK-128(V)2 Configuration**

FBCB2 System.   The FBCB2 system is an automated, computerized, digitized network, which provides brigade-and-below elements with a seamless battle command capability. The AN/UYK-128(V) Computer, along with associated communication and GPS equipment, allows each platform user in the network to send and receive information across the depth and breadth of the battlefield.

Functionality.   The FBCB2 System facilitates the flow of battle command information and supports lower echelon battle command tactical mission requirements. Additionally, it inter-operates with Army and Joint Command and Control (C2) and other sensor systems resulting in the vertical and horizontal information integration of the battlefield. This shared common picture of the battlefield provides the ability to display visually near real-time Situational Awareness (SA) for the commanders, staffs, and soldiers.

Subsystem.   Each AN/UYK-128(V) Computer, along with associated communications and Global Positioning System (GPS) equipment, is a subsystem within the FBCB2 architecture. Installed in tactical vehicles, and weapons platforms, each AN/UYK-128(V) Computer is tailored to a specific platform configuration and role or mission. The AN/UYK-128(V) Computer consists of the following: computer hardware, system operating software, FBCB2 software and installation kit hardware. As a role based information system, the AN/UYK-128(V) Computer provides horizontal and vertical information exchanges at all echelons, from platform-to-platform and brigade-to-brigade.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, Functional Users Manual for The Army Maintenance Management System (TAMMS), as contained in Maintenance Management Update.

Reporting of Item and Packaging Discrepancies

Fill out and forward SF 364 (Report Of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55.

Transportation Discrepancy Report (TDR) (SF 361)

Fill out and forward Transportation Discrepancy Report (TDR) (SF 361).

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on a SF 368 (Product Quality Deficiency Report). Mail to: Commander, US Army Communications-Electronics Command, ATTN: AMSEL-LC-LM-LEO-E-ED-P, Fort Monmouth, NJ 07703-5000. We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Internal and external equipment is protected in accordance with (IAW) MIL-F-7179. The Chemical Agent Resistant Coating (CARC) topcoat complies with MIL-C-46168 type IV, color green 383.

OZONE DEPLETING SUBSTANCES (ODS)

Not applicable.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with Technical Manual 750-244-2.

PREPARATION FOR STORAGE OR SHIPMENT

Prior to the storage and shipment of equipment issued to (and used by) Army activities, the equipment shall be checked for condition and completeness. After shipment, the equipment shall be checked for condition, completeness, cleanliness, and operational readiness before storing.

Storage. The storage temperature range shall not exceed:

1. Ground level -60ºF (-51.11ºC) to +155ºF (+68.33ºC)
2. 40,000 feet (12.2km) -60ºF (-51.11ºC) to +185ºF (+85ºC)

Shipment. Packaging for shipment shall be in accordance with best commercial practice and in accordance with the American Society for Testing Materials (ASTM) Standard Practice for Commercial Packaging D3951-90.

WARRANTY INFORMATION

The AN/UYK-128(V) is warranted in accordance with the date found in block 23, of DA Form 2408-9 of the logbook. Also, refer to TB 11-7010-326-30 for further information regarding warranty. Report all defects to your supervisor, who will take appropriate action.

NOMENCLATURE CROSS-REFERENCE

The following lists the nomenclature and definitions as used in this manual.

NOMENCLATURE CROSS-REFERENCE–Continued

Table 1. Nomenclature And Definitions

COMMON NAME	OFFICIAL NOMENCLATURE	DEFINITION OF TERMINOLOGY
FBCB2 System	Force XXI Battle Command Brigade-And-Below (FBCB2).	Consists of the AN/UYK-128(V) Computer, operational software, the Precision Lightweight GPS Receiver (PLGR), the Single Channel Ground and Airborne Radio System Advanced System Improvement Program (SINCGARS ASIP), the Enhanced Position Location Reporting System (EPLRS), and the Internet Controller (INC).
AN/UYK-128(V) Computer	Computer Set, Digital AN/UYK-128(V)	Basic hardware: Processor Unit, Display Unit, Keyboard Unit,and Removable Hard Disk Drive Cartridge, utilizing information-age technology, provides Situational Awareness (SA) and Command and Control (C2) information to all echelon levels and platforms on the battlefield. As such, provides a seamless, holistic Battle Command capability and increased battlefield operational capabilities.
Processor Unit (PU)	Processor Unit (PU).	Performs all the central processing for the AN/UYK-128(V) Computer, and contains an internal power supply which provides all the internal and external voltage requirements.
Display Unit (DU)	Display Unit (DU)	Provides for the visual display of information to the operator. The DU touchscreen provides the operator with both information and one method of Soldier-Machine Interface (SMI). Power button, control buttons and function buttons provide the soldier with another means of SMI. LED indicators provide operator with visual status of the AN/UYK-128(V) Computer system.
Keyboard Unit (KU)	Keyboard Data Entry	Provides two methods of Soldier-Machine Interface (SMI). The first method being the keyboard keys and the second being the mouse-pointing-device.
Removable Hard Disk Drive Cartridge (RHDDC).	Disk Drive Unit	A protective case that contains the Hard Disk Drive, a non-volatile mass storage system, which stores the operating system, the software, and the operator-generated files.
FBCB2 Software	Operating System Software	Provides the basic data processing capability. Consists of UNIX Solaris and Embedded Battle Command (EBC) Software. Provides the graphic displays, the operations and the interface that allows the operator to perform his/her mission.
Installation Kit	Installation Equipment, Data Processing.	Contains the associated cables and mounting hardware needed to install the AN/UYK-128(V) Computer system into specific platforms.
Stylus	Computer Unit Pen	A non-metallic pen that facilitates precise pointing device functional-ity with the Soldier-Machine Interface (SMI) of the touchscreen. The stylus must be used when calibrating the touchscreen. The stylus is especially helpful with the SMI when the operator is required to wear Mission-Oriented Protective Posture (MOPP) gloves.
Isolation Kit Assembly	Plate, Resilient Mount	Provides shock isolation between the Processor Unit (PU) and vehicle chassis. A second isolation kit provides shock isolation between the Display Unit (DU) and the vehicle chassis.

NOMENCLATURE CROSS-REFERENCE–Continued

Table 1. Nomenclature And Definitions–Continued

COMMON NAME	OFFICIAL NOMENCLATURE	DEFINITION OF TERMINOLOGY
Precision Lightweight GPS Receiver (PLGR)	Satellite Signals Navigation Set AN/PSN-11	Provides a self-contained receiver of Global Positioning System (GPS) satellite signal, allowing the FBCB2 user to derive position, velocity and time information.
Single Channel Ground and Airborne Radio System (SINCGARS)	Single Channel Ground and Airborne Radio System (SINCGARS) Advanced System Improvement Program (ASIP)	Provides connectivity to the AM-7239/VRC Vehicular Amplifier Adapter (VAA) via the SINCGARS ASIP Receiver/Transmitter (R/T). This connection establishes the interface to the INC, EPLRS and AN/UYK-128(V) Computer system.
Enhanced Position Location Reporting System (EPLRS)	Enhanced Position Location Reporting System (EPLRS)	Provides a system of frequency hop, Time Division Multiple Access (TDMA) radios designed for data communication and position location. EPLRS Very High-Speed Integrated Circuit (VHSIC) radios provide high throughput for host to host digital data communications.
Comm Router	Internet Controller (INC)	Provides an Internet Protocol (IP) router that extends the packet data communication capability to the Combat Net Radio (CNR) users. The INC is housed in the SINCGARS Vehicular Amplifier Adapter (VAA).
MILSATCOM	Military Satellite Communication	Provides line-of-sight and tactical satellite communications that will serve as a primary command-and-control single-channel radio for Army MAGTFs and their elements.

LIST OF ABBREVIATIONS / ACRONYMS

This listing includes the applicable AN/UYK-128(V) Computer abbreviations and acronyms.

Table 2. Abbreviations/Acronyms List

ACRONYM	DESCRIPTION
BIT	Built-In-Test
BIOS	Basic Input/Output System
CHAS	Chassis
CMOS	Complimentary Metal-Oxide Semi-Conductor
CPU	Processor Unit
dC	Diagnostic Code
DU	Display Unit
DISP	Display
DTD/MDL	Data Transfer Device/MIssion Data Loader

LIST OF ABBREVIATIONS / ACRONYMS–Continued

Table 2. Abbreviations/Acronyms List–Continued

ACRONYM	DESCRIPTION
EBC	Embedded Battle Command
EIAD	Expansion Interface Adapter Device
ESD	Electrostatic Discharge
ESDS	Electrostatic Discharge Sensitive
FBCB2	Force XXI Battle Command Brigade-and-Below
FP	Fault At Post
I/O	Input/Output
KU	Keyboard Unit
LRU	Line Replaceable Unit
POST	Power-On-Self-Test
PPP	Point-to-Point Protocol
PU	Processing Unit
PWR	Power
RHDDC	Removable Hard Disk Drive Cartridge
SIAD	Serial Interface Adapter Device
SICPS	Standardized Integrated Command Post Shelter
SVGA	Super Video Graphics Array
USB	Universal Serial Bus

QUALITY ASSURANCE (QA)

Refer to the latest issue of DA PAM 25–30 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

SAFETY, CARE, AND HANDLING

The following highlights the safety, care, and handling concerns for AN/UYK-128(V) equipment.

SAFETY, CARE, AND HANDLING–Continued

Table 3. Safety, Care, And Handling

Type of Equipment	Safety, Care, and Handling Information
Mechanical	The heaviest Line Replaceable Unit (LRU) is the PU which is 18.6 pounds with the Removeable Hard Disk Drive Cartridge (RHDDC).
Acoustical	AN/UYK-128(V) noise is generated by the internal fans. The noise level is insignificant.
Electrical	The highest voltage in AN/UYK-128(V) is +33VDC.
Ionizing Radiation's	No x-ray or other ionizing radiation.
Radioactive Materials	None used in AN/UYK-128(V).
Toxic Materials	AN/UYK-128(V) uses a Lithium clock battery and Mercury lamps for display backlights. The battery is so small that the Lithium content is well below the amounts permitted by Federal Regulations for use in a confined area.
Software Safety	Software malfunction cannot damage the AN/UYK-128(V).

NUCLEAR HARDNESS

Not applicable.

SECURITY MEASURES FOR ELECTRONIC DATA

When the Removable Hard Disk Drive Cartridge (RHDDC) is installed in the Processor Unit (PU) or removed from the system (for maintenance, troubleshooting, or any other reason), proper safeguards must be taken to avoid compromise of classified material. The RHDDC is considered classified, regardless of the level of access for the role of the user. The RHDDC must be handled as classified media and maintained in accordance with AR 380-19. Containers that are in accordance with the requirements of AR 380-5 should be used for movement and storage of the removable media that may contain classified information.

The RHDDC must be marked in accordance with AR 380-5. The RHDDC remains a classified media until properly purged or destroyed in accordance with the procedures outlined in AR 380-5.

Hardware security is aided by padlocks for the Processor Unit (PU) Removable Hard Disk Drive Cartridge (RHDDC), Display Unit, and Keyboard stowage box.

END OF WORK PACKAGE

CHAPTER 1

UNIT MAINTENANCE

INTRODUCTORY INFORMATION WITH THEORY OF OPERATION

FOR

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW (FBCB2)

CHAPTER 1

UNIT MAINTENANCE
INTRODUCTORY INFORMATION WITH THEORY OF OPERATION

WORK PACKAGE INDEX

UNIT MAINTENANCE
FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA

DESCRIPTION AND DATA

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES
EQUIPMENT DESCRIPTION

The lists below supplies the required information for the AN/UYK-128(V) equipment.

Characteristics.

Processor 333 MHz Pentium II minimum.

Display 800 X 600 Sunlight Readable Color

Operating Temperature -25° F (-32° C) to 140° F (60° C)

Capabilities and Features.

Communications.   Permits real-time requests for fuel, ammunition, food, etc. or maintenance assistance from platform level.

Situational Awareness.   Disseminates automatic position reports frequently enough to provide sufficient location information for combat identification and situational awareness purposes. Provides the capability to ascertain friend/unknown identification to decrease fratricide.

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS

The following 3 figures show the basic components of the AN/UYK-128(V) Computer. Computer location differs by platform. Information for specific platforms can be found in the appendices of TB 11-7010-326-20. The Appendices in TB 11-7010-326-20 contain the details of the cables and brackets for each specific platform.

DISPLAY UNITS

The first figure shows the three configurations of the Display Unit (DU). The display units are supplied in two screen sizes, 10.4" and 12.1". Both configurations are sunlight readable. The screens are touch-activated by fingers or stylus. Function Keys can be activated by the operator while wearing MOPP IV gloves using the stylus. The left side connectors accept the cables which interface the display unit to the PU and KU. The 10.4" screen may be configured similar to the 12.1" or it may have function keys along the bottom. All three configurations are plug-in compatible.

NSN 7025-01-475-0229 (10.4")   NSN 7025-01-475-0280 (12.1")   NSN 7025-01-4750282 (12.1")
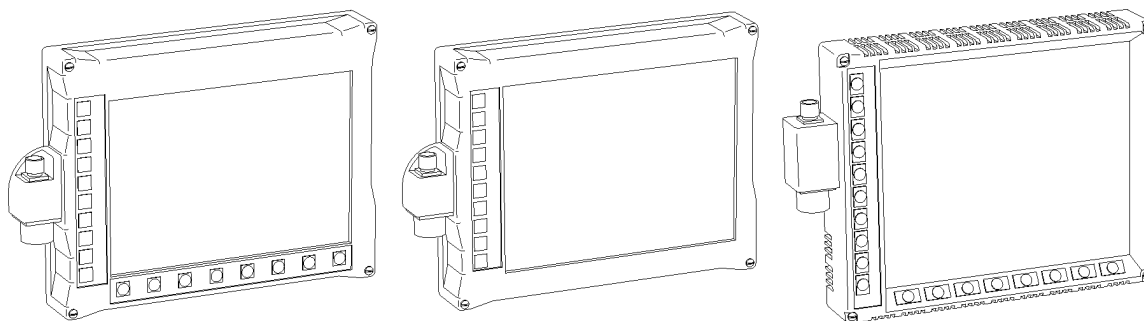
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Figure 1   **Three Display Units (DU)**

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS–Continued

PROCESSOR UNITS

The second figure shows the two Processor Unit (PU) configurations. Both configurations have an access door that provides access to the RHDDC and Battery Tray/Battery Box. The access door must remain closed (secured) during wash-down procedures. The third figure shows the cable side of the PU with the Chassis E1 ground connection and six connectors. J1 is the 28 VDC input. J2 provides audio from a 1 Watt stereo amplifier as well as a monaural Input/Output (I/O). J3 provides an asynchronous EIA-232 COM B (COM 2) serial port, plus four additional asynchronous EIA-232/422/423 compatible serial ports. J4 provides all the display power and video requirements for the Display Unit. J4 also provides power to the Keyboard Unit (KU) and a Universal Serial Bus (USB) for the KU. J5 is the interfaces supporting both 12Mbps and 1.5Mbps used by some configurations. J6 provides the Super Video Graphics Array (SVGA) interface which supports both the analog video for a Cathode Ray Tube (CRT) type video monitor and digital video for a flat panel Liquid Crystal Display (LCD).

NSN 7021-01-475-0217   NSN 7021-01-474-3793

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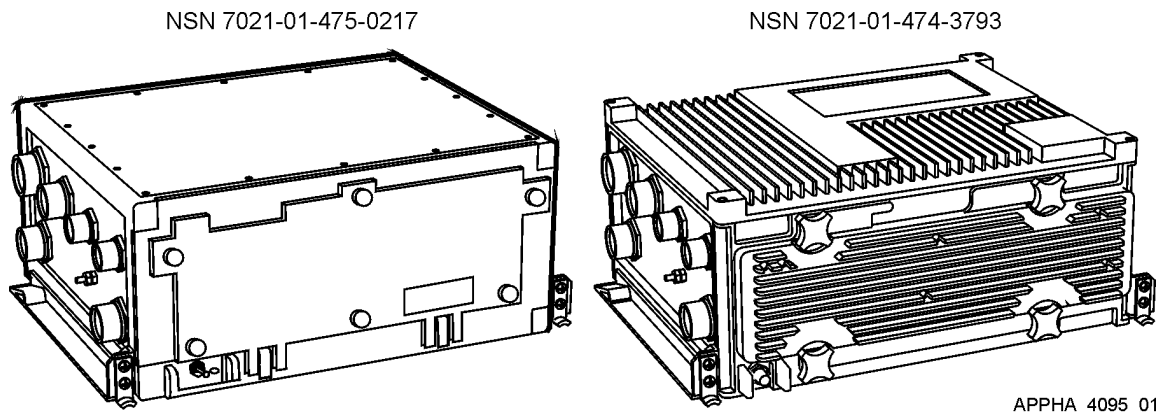
Figure 2 **Two Types of Processing Units**

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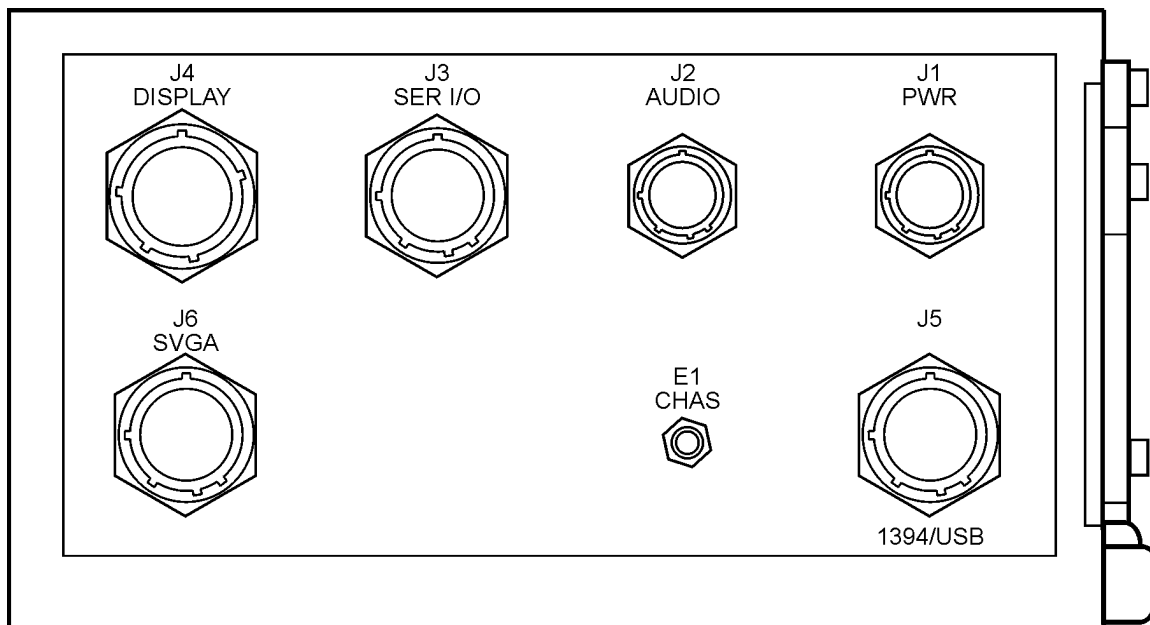
Figure 3 **Connector Side of Processor Units**

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS–Continued

KEYBOARD UNITS

The figures below show details of the two Keyboard Unit (KU) configurations. Each key is back lit for night time visibility. The back lighting is adjustable to a level low enough to avoid detection. Back light adjustments are in the keyboard controls. Keyboard is in the normal QWERTY configuration. The mouse and mouse-switch buttons are part of the keyboard.

MOUSE POINTING DEVICE

APPHA_4119_02
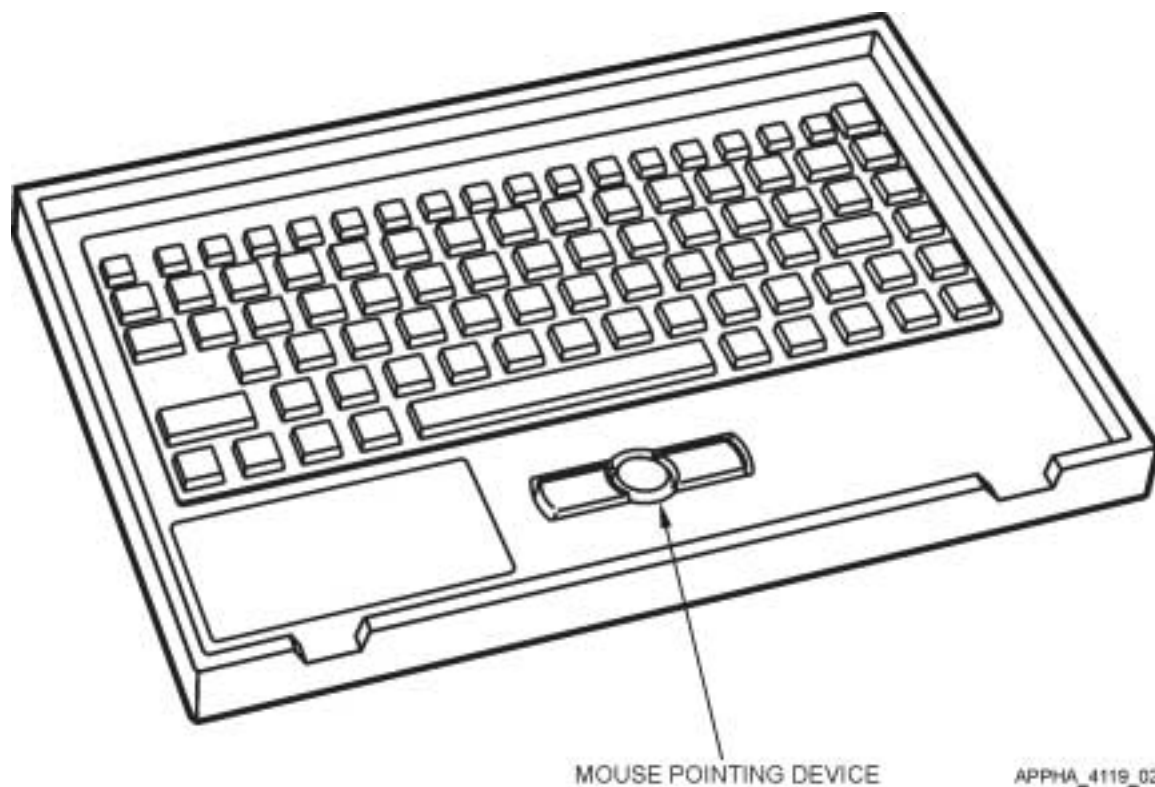
Figure 4 **Keyboard Unit (KU) NSN 7025–01–474–3791/NSN 7025–01–487–0581**

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS–Continued

KEYBOARD UNITS–Continued
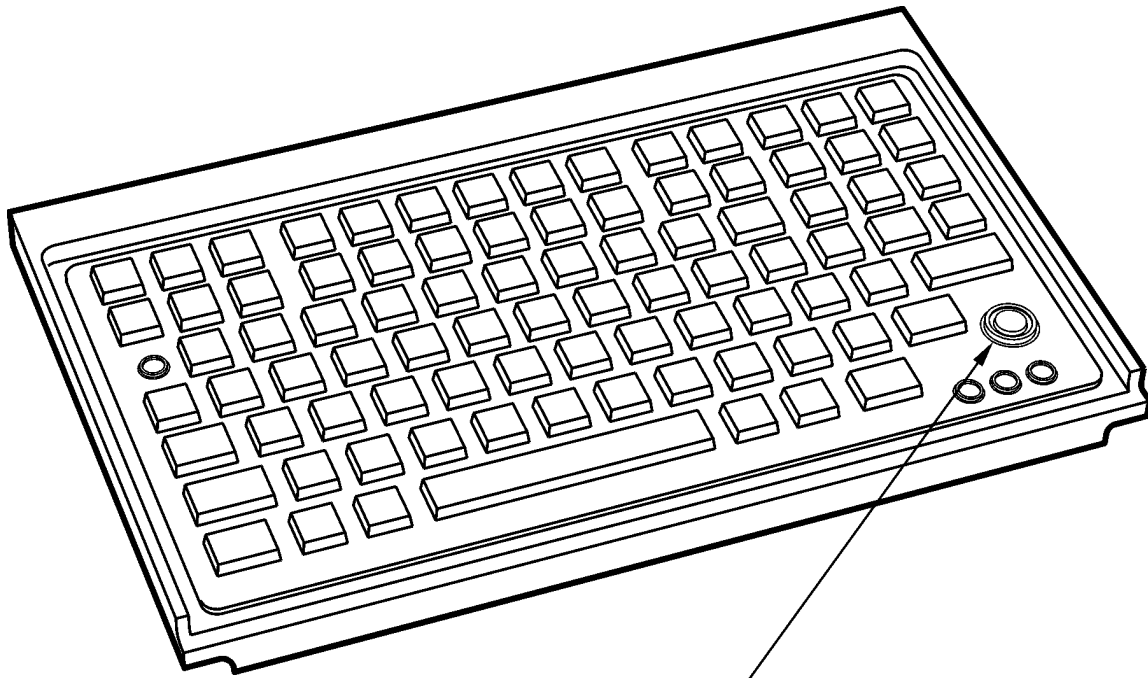
MOUSE POINTING DEVICE   APPHA_4120_01

Figure 5   **Keyboard Units (KU) NSN 7025–01–474–3792**

DIFFERENCES BETWEEN MODELS

Platform differences determine the configuration. The AN/UYK-128(V) Computer components are common for all platforms, while the remaining hardware (cables, mounting brackets, etc.) tailors AN/UYK-128(V) Computer to the platform. There are three types of display 1-10.4", 1-1.4"/12.1" and 1-12.1") installed in the vehicles. In some installations, a PU Thermal Guard (Shown in the next figure) covers the top of the PU for handling protection. All PU, DU, and KU parts of the AN/UYK-128(V) Computer are interchangeable. Each PU contains a Removable Hard Disk Drive Cartridge (RHDDC) and back-up battery. The RHDDC and battery are not interchangeable. Listed below are the two PU types and identification by the National Stock Number (NSN) of the mating Removable Hard Disk Drive Cartridge (RHDDC) and battery assemblies. (See Device Identification.)

Table 1. Device Identification

Device	Identification	Device	Identification
Computer (PU)	NSN 7021-01-474-3793 NSN 7021–01–487–0578	Computer (PU)	NSN 7021-01-475-0217 NSN 7021–01–487–0579
Removable Hard Disk Drive Cartridge (RHDDC)	NSN 7025-01-474-3789 NSN 7025–01–487–0580	Removable Hard Disk Drive Cartridge (RHDDC)	NSN 7025-01-474-5753
Battery Tray	P/N 0410-06558-0000	Battery Box	P/N 59755-1

LOCATION AND DESCRIPTIONS OF MAJOR COMPONENTS–Continued

DIFFERENCES BETWEEN MODELS–Continued

PU Thermal Guard.   The Thermal Guard is only utilized on certain platforms.
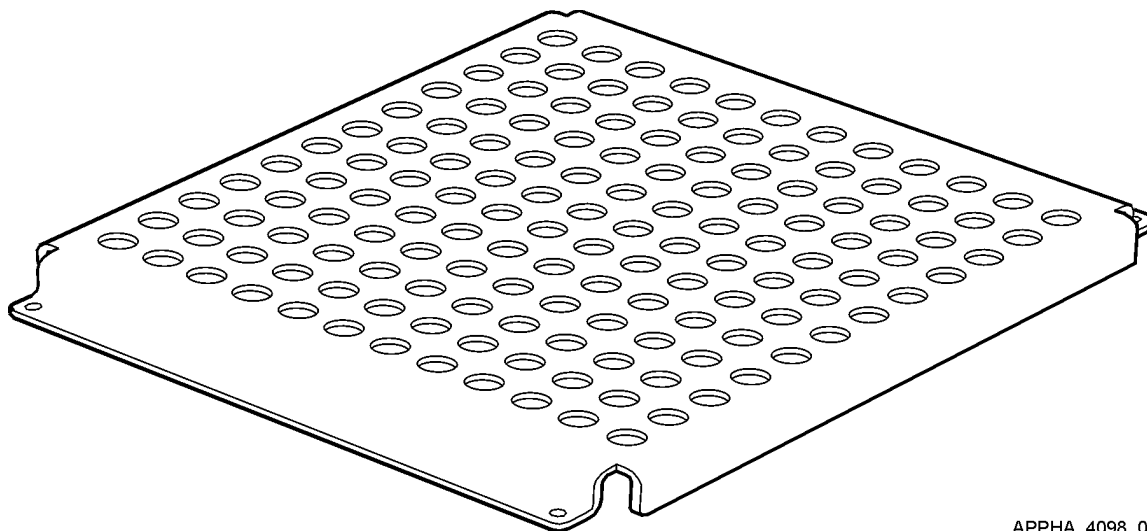
APPHA_4098_01

Figure 6   **PU Thermal Guard P/N 872860–1**

EQUIPMENT DATA

Installation Hardware.   The AN/UYK-128(V) Computer components are attached to the platform with various mounts, brackets, and cable configurations. These are supplied in the form of installation kits for each platform shown below. The first column 'APP' stands for the Appendix letter in TB 11-7010-326-20. The second column contains the 'Platform' or vehicle information in the applicable appendix. The part numbers are listed in each vehicle appendix in TB 11-7010-326-20.

Table 2. AN/UYK-128(V) Platforms (TB 11-7010-326-20)

APP.	PLATFORM	APP.	PLATFORM
A	M109A6 Paladin	R	M923 5-Ton
B	M1064 Mortar	S	M1037/1097 RWS
C	M981 FIST-V	T	M992 FAASV
D	M9 ACE (DOZER)	U	M1068 Brigade (MN)
E	M60 AVLB/M	V	M1068 Battalion (SICPS)
F	M548A3 Volcano	W	M1068 FDCV
G	M577 MORTAR (FDC)	X	M934 EXPANDO VAN
H	M577 MEDICAL	Y	M35A3 $2\frac{1}{2}$-Ton Cargo Carrier
I	M113 Common	Z	M58
J	M113 APC Common	AA	M1070 Heavy Equipment Transport (HET)
K	M88A1 HERCULES	AB	SICPS Tent
L	M998/M1026/M1038 HMMWV With INTEGRATED RACK	AC	M113 TAC-P

EQUIPMENT DATA–Continued

Table 2. AN/UYK-128(V) Platforms (TB 11-7010-326-20)–Continued

APP.	PLATFORM	APP.	PLATFORM
M	M997 HMMWV Ambulance	AD	FMTV $2\frac{1}{2}$ Ton Truck
N	M93A1 Fox (NBC)	AE	Q36 HMMWV
O	M998 Avenger	AF	DEUCE
P	M1031 CUCV Shop Van	AG	M1114 Up-Armored HMMWV
Q	M985/978/1074/1075 HEMTT/PLS	AH	M1113 ECV HMMWV

NOTE

The PU Thermal Guard Assembly P/N 872860-1 is utilized on M113 Common, M1031 CUCV, M93 FOX, M9 ACE, M998/M1026/M1038 HMMWV I-Rack, and M 923 5-Ton platforms.

The guard is mounted on the top of the PU with four (4) captive screws, one in each corner. Vehicle installation requirements are unique, therefore not every installation has need for this guard. The thermal guard is currently being phased out.

EQUIPMENT CONFIGURATION

General Specifications.   General information for each subassembly. There are two configurations of each subassembly with the PU, DU, and KU physically and electrically interchangeable. The RHDDC and back-up batteries are not interchangeable.

Processing Unit (PU).   Refer to the table below for (PU) data. The internal power supply converts the incoming 20 - 33VDC to voltages required by the Processor Unit, the Display Unit, and the Keyboard Unit. Temperature sensors respond to over temperature conditions by stuttering the clock (changing the clock speed). The Input/Output (I/O) data is listed in Processor Unit (PU) Data table below.

Table 3. Processor Unit (PU) Data

ITEM	DATA
PU	Single, 333 MHz Pentium II; 192 MB memory, and 256KB cache minimum
RHDDC	Includes a removable disk cartridge with a 6 GB capacity (minimum).
I/O	10Base-2 Ethernet, 1 external RS-232 port and four additional EIA-422/EIA-423 compatible asynchronous ports

Display Unit (DU).   There are two sizes of sunlight-readable color displays with 800 x 600 resolution and a wide viewing angle. Sunlight readability is provided by high-output back lights. Brightness is controlled by a micro controller using pulse-width modulation and back light voltage variations to achieve a wide dynamic range of intensity. The two lowest illumination levels (of 10) are for night-time use only. Power management firmware responds to temperature sensor inputs by reducing the back light intensity. There are two LCD size configurations: 12.1" and 10.4".

Keyboard Unit (KU).   The two Keyboard Units have standard QWERTY type keyboard with adjustable back lit keys for night use. Rubberized covering over the keyboard prevents contamination from sand, dirt, and liquids. The NSN 7025-01-474-3791/NSN 7025–01–487–0581 keyboard has a built-in mouse consisting of a center control element with right and left selector buttons located in the center of the forward apron. The NSN 7025-01-474-3792 keyboard has a built-in mouse consisting of a control element and two selector buttons located in the lower-right corner. The keyboard is covered by a molded "rubber" membrane, has QWERTY keyboard layout with sculpted keys. Keys are backlit, with a six-level brightness control that will lower light intensity for night use. The keyboard unit interfaces with the Processor Unit (PU) via a connector on the display unit. The Keyboard Unit cable is hardwired.

Removable Hard Disk Drive Cartridge (RHDDC).   There are two types of Removable Hard Disk Drive Cartridge (RHDDC). They are both accessible through a hinged access door on the front of the Processor Unit. The two types of RHDDC are not interchangeable between the two versions of PU.

EQUIPMENT DATA–Continued

Physical Specifications.   Available in the Operators Manual TM 11-7010-326-10.

Thermal Management.   The Processor Unit and Display Unit have the capability to reduce power consumption and heat dissipation at high operating temperatures to prevent equipment damage to the equipment. These reductions are achieved by diminishing the back light intensity to levels used by a standard active matrix notebook computer display and by reducing PU throughput by "stuttering" the clock. "Stuttering" the clock shortens the ON portion of the clock cycle to reduce generated heat.

POWER: 28VDC

The unit PU operates directly from 28VDC vehicle power. The PU also includes provisions to make use of a BB-388/U Rechargeable Battery as a holdup power source. The holdup batteries allow shutdown of the AN/UYK-128(V) Computer in the event of vehicle power loss. Key characteristics of the battery are:

1. 13.2 Volts output with 1.5 Ampere Hour rated capacity, sealed design, with Nickel Metal Hydride chemistry and visible state of charge indicator.
2. The AN/UYK-128(V) Computer is capable of a minimum of 10 minutes of continuous operation from a fully-charged BB-388/U battery following removal of primary power from the power input at 68º to 77º degrees F (20º to 25º degrees C) ambient temperature.
3. Opening the PU circuit breaker (main power switch) the battery is taken-out-of-circuit. At the same time, the battery remains in-circuit when the circuit breaker is on and the DU power switch is off.
4. The PU includes a battery charging capability sufficient to place a full-charge on the BB-388/U battery over the course of 8 hours of charging at 68º to 77º degrees F (20º to 25º degrees C) ambient temperature.
5. Charging is performed whenever the battery is installed, the battery temperature is within operating limits, and the PU's circuit breaker is in the "On" position.
6. The BB-388/U battery is installable or replaceable by the user.
7. The replaceable battery configuration is not the same for the National Stock Number (NSN) NSN 7021-01-474-3793/NSN 7021-01-487-0578 PU as it is for the NSN 7021-01-475-0217/NSN 7021-01-487-0579 PU and therefore they are not interchangeable.
8. The NSN 7021-01-474-3793/NSN 7021-01-487-0578 AU/UYK-128(V) computer contains a single BB-388/U battery and a 9 Volt non-chargeable battery used for the self-test Liquid Crystal Display.
9. The NSN 7021-01-475-0217/NSN 7021-01-487-0579 contains two BB-388/U batteries.
10. If the PU circuit breaker is left on for an extended period of time, it can drain the vehicle batteries.

EQUIPMENT DATA–Continued
POWER DISTRIBUTION

Prime power is provided by the host platform directly to the PU. The figure below shows power (PWR) distribution (what voltage is on which pin) for the AN/UYK-128(V) Computer subassemblies.

NOTE

When W2 is disconnected (either end) the PWR ON logic (W2-P1-19) is missing. With the power on logic missing, the PU will not operate and none of the display or keyboard voltages shown can be measured.
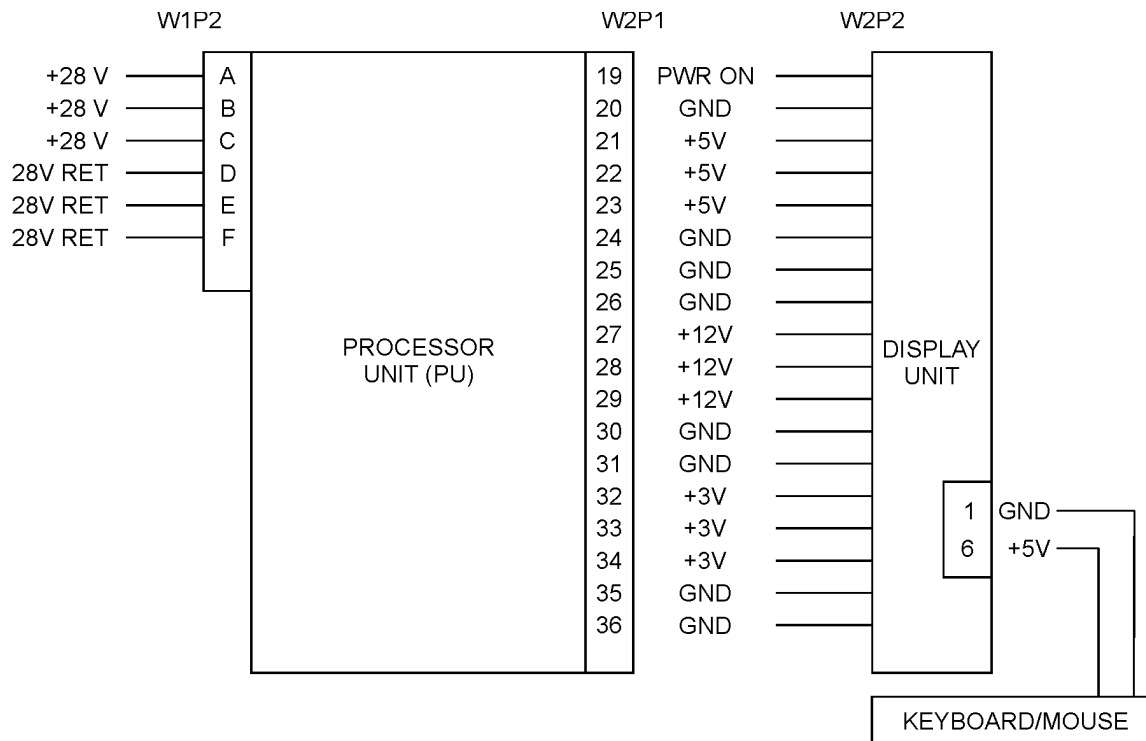
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Figure 7   **Power Distribution**

Power requirements are as follows below.

Table 4. Power Requirements Configuration

MODE	VOLTAGE	WATTS
Power-Up	23 VDC - 28 VDC	80 Nominal

SYSTEM INTERFACES

System interfaces vary with platform type. The following two figures show two typical of platform interface configurations. Refer to Technical Bulletin TB 11-7010-326-20 for detailed interface configuration for specific platforms. The first figure shows the track vehicle system interface with intercom. Tracked The second figure shows the wheeled vehicle system interface without an intercom.

EQUIPMENT DATA–Continued

APPCA_4047_01

Figure 8   **Vehicle System Interface With Intercom**

EQUIPMENT DATA–Continued

APPCA_4042_01

Figure 9 **Vehicle System Interface Without Intercom**

Global Positioning System (GPS) Interface.   The Precision Lightweight GPS Receiver (PLGR) provides the time of day and location reference for the AN/UYK-128(V) Computer system. For PLGR operating instructions, refer to WP 0016 00 , References.

Internet Controller (INC) Interface.   The INC module is a router located in the AM-7239/VRC SINCGARS Vehicular Amplifier Adapter (VAA) assembly. The INC to AN/UYK-128(V) interface is accessed at connector A2 J6 of the VAA. The INC interface to the AN/UYK-128(V) has the option to interface to either one or two SINCGARS Radios and an EPLRS.

Radio Interface.   The INC to SINCGARS Radio interface is compliant with MIL-STD-188-220A protocol, supporting both Type 1 and Type 4 data link protocol operations.

Expansion Interface.   There are two expansion devices available to various AN/UYK-128(V) configurations.

The Serial Interface Adapter Device (SIAD) cable connected to J3 of the PU has one output (J1) for the INC and a second output (J2) for the PLGR. These are the most common connections. This same SIAD assembly has three additional serial connectors for future expansion, J3, J4, and J5.

The W5 cable assembly is the Expansion Interface Adapter Device (EIAD) that connects to the Universal Serial Bus (USB) connector PU-J5. The W5 cable is used in the Standardized Integrated Command Post Shelter (SICPS) tent configuration but may be used with any vehicle requiring a 10/100 BASE-T Ethernet interface.

Mission Data Load (MDL) Interface.   The MDL may be connected to the AN/UYK-128(V) Processor Unit or to the Display Unit. The first 2 of the following 3 figures illustrates the two MDL cable connection configurations for the AN/UYK-128(V) Computer. The third figure illustrates the MDL connection to the TOUGHBOOK Computer.

EQUIPMENT DATA–Continued

```
┌──────────────┐                              ┌──────────────┐
│              │ J5  P1          P2           │              │
│  PROCESSOR   │  ┌───┐         ┌───┐         │   DTD/MDL    │
│    UNIT      │  └───┘─────────└───┘         │              │
│              │       889493-1               │              │
│              │                              │              │
└──────────────┘                              └──────────────┘
```

                                                    APPCA_4086_02

Figure 10   **DTD/MDL To AN/UYK-128(V) PU Connection Diagram**

```
┌──────────────┐                              ┌──────────────┐
│              │ J2  P1          P2           │              │
│  DISPLAY     │  ┌───┐         ┌───┐         │   DTD/MDL    │
│    UNIT      │  └───┘─────────└───┘         │              │
│              │       889494-1               │              │
│              │                              │              │
└──────────────┘                              └──────────────┘
```

                                                    APPCA_4086_03

Figure 11   **DTD/MDL To AN/UYK-128(V) DU Connection Diagram**

```
┌──────────────┐                              ┌──────────────┐
│              │ USB P1          P2           │              │
│  TOUGHBOOK   │  ┌───┐         ┌───┐         │   DTD/MDL    │
│              │  └───┘─────────└───┘         │              │
│              │       889495-1               │              │
│              │                              │              │
└──────────────┘                              └──────────────┘
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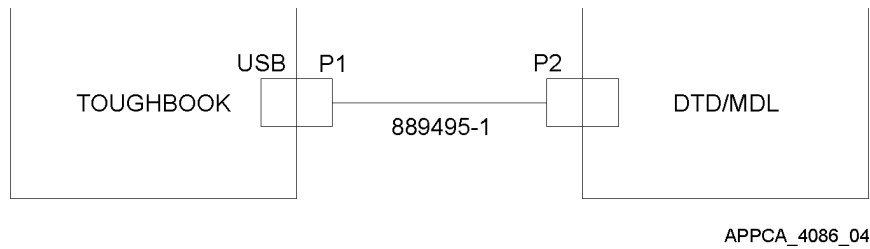
Figure 12   **DTD/MDL To Toughbook Connection Diagram**

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

AN/UYK-128(V) THEORY OF OPERATION

OVERVIEW

FBCB2 is an automated, role-based information system which provides horizontal and vertical information exchange at all echelons, from platform to platform, and from platforms through commanders, within Brigade (BDE) sized units and between BDEs. FBCB2 provides the ability to display SA information (e.g., position), distribute C2 messages (e.g., alerts and warnings), develop and distribute unit task organization and reorganization data; process and display status information (provided by weapons systems, sensors, and support platforms), prepare and distribute orders, and receive/develop/distribute a common battlefield picture. Visual displays maximize graphical orientation to a digital map, and minimize tedious textual displays and keyboard interaction. FBCB2's use of radios for data sharing also permits commanders and staff to remotely operate and maintain database connectivity when away from their command posts (operating on-the-move), and to digitally control and monitor their subordinate units' status and position. The two primary operational system capabilities supported by FBCB2 are Battle Command (the art and science of battle decision-making, leading, and motivating soldiers and their organizations into action to accomplish specific missions) and Battle Command Support (mission planning, rehearsal, and execution support required for current and future operations).

SYSTEM PURPOSE

The AN/UYK-128(V) combines information received over the Tactical Internet with information from the Precision Lightweight GPS Receiver (PLGR), and other vehicle systems and subsystems, and assimilates processes this information for the operator. This assimilated data will include maps showing ground tracks, air tracks, ground units, enemy units, ownership position, and overlays. The AN/UYK-128(V) relays information regarding network status, warnings, cautions, track correlation, and coordinate conversions through the display and the intercom system. AN/UYK-128(V) will also post its own location, heading, and other information to the Tactical Internet. To do this, the AN/UYK-128(V) can send messages through the Enhanced Position Location Reporting System (EPLRS) and Single Channel Ground and Airborne Radio System (SINCGARS). These peripherals are provided as Government Furnished Equipment (GFE).

OPERATIONAL CONCEPT

FBCB2 is a system to be used with all battlefield operating systems, including maneuver, fire support, air defense, Command and Control (C2), intelligence mobility and survivability, and combat service support units performing missions across the operational continuum at the tactical level of war. FBCB2 provides a seamless holistic Battle Command capability and increased battlefield operational capabilities through the implementation of information-age technology. FBCB2 provides Situational Awareness (SA) and C2 to the lowest level platforms/soldiers on the battlefield. Aggregation of individual subsystems will establish a computerized digital tactical network linking all battlefield-automated systems, resulting in one homogenous battle command operational architecture throughout all facets of the brigade structure.

POWER INTERFACE

The AN/UYK-128(V) Computer operates from an external power source, 28 VDC nominal. For installed equipment, this power source is provided by the host platform. For bench-checked equipment, a separate power source is used.

The AN/UYK-128(V) Computer provides protection against power ripple,surge and spike voltage conditions through use of internal power hold-up batteries. A rechargeable, Nickel Metal Hydride (NiMH) battery provides internal power holdup during low voltage conditions to allow proper shutdown of the AN/UYK-128(V) Computer. The Processor Unit (PU) can recharge these internal power hold-up batteries while the PU is operating. The internal power hold-up batteries are located in the PU battery box or battery tray (depending on PU version) located behind the access panel. The battery tray/battery box contains a voltage/state-of-charge indicator which can be used to determine the state of charge of the batteries without requiring

POWER INTERFACE–Continued

that external power be applied to the PU to use the indicator. The figure below shows the interface for the AN/UYK-128(V) Computer.
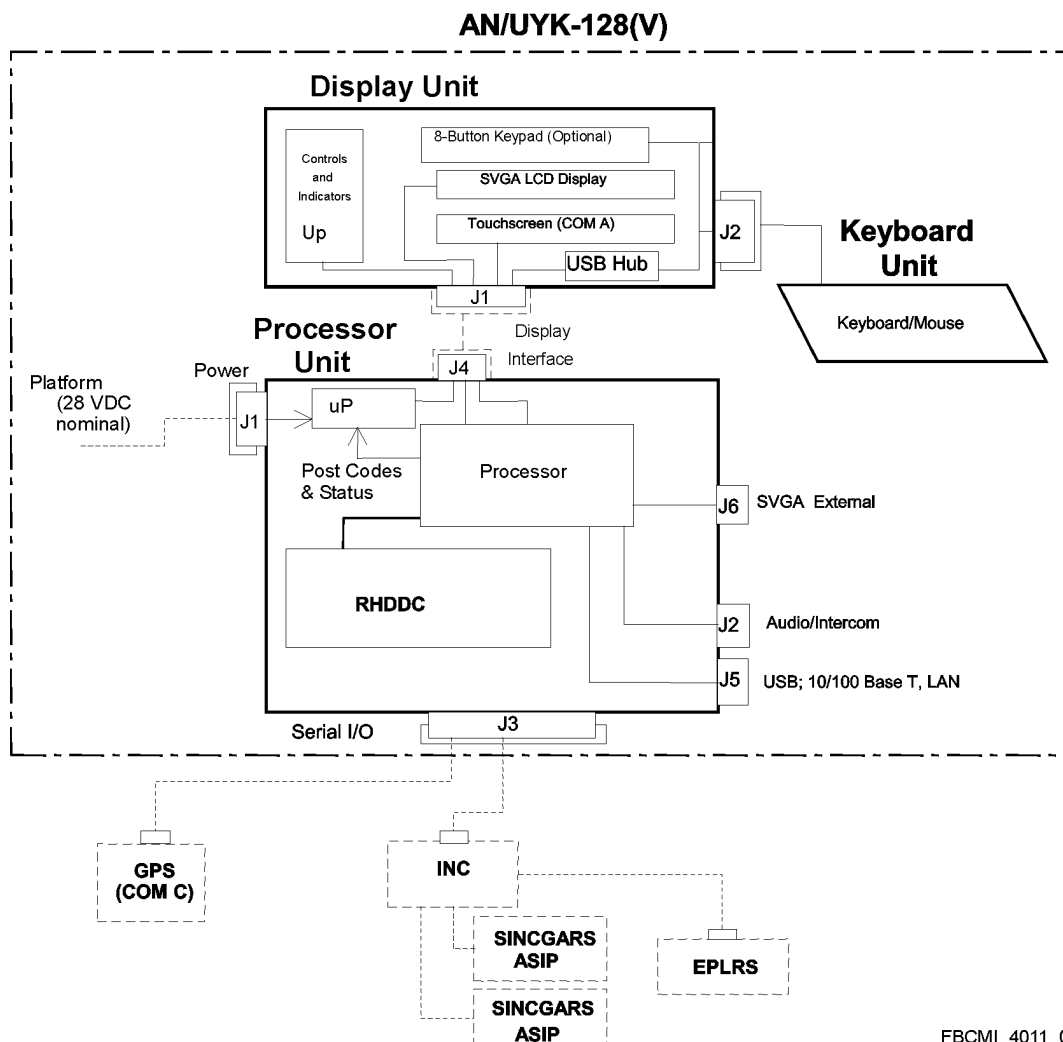

Figure 1   **Computer System Interface**

Removable Hard Disk Drive Cartridge Interface.   A Removable Hard Disk Drive Cartridge (RHDDC) is located behind the access panel in both versions of the PU. There are two different RHDDC, one for each PU version, which are not interchangeable.

Precision Lightweight GPS Receiver (PLGR) Interface.   PLGR information is available via an Electronic Industries Association (EIA)-422 serial interface. Only the Time Mark Message is accepted from the PLGR (including position, navigation, timing, PLGR-unique data and satellite almanac, current ephemeris, and current year data). Interface is between the PLGR J2 and SIAD J2 connector using a W3P cable, and SIAD J2 connector and the PU J3 connector using a W3 cable.

Internet Controller (INC) Interface.   The INC provides the FBCB2 interface to the platform radio suite. The mechanical connection employs 3 wires (two signal wires and a ground wire.). The interface operates at a data rate of 38.4 kbps. Interface is between the INC J6 connector and SIAD J1 connector using a W3N cable, and SIAD J1 connector and the Processor Unit J3 connector using a W3 cable.

POWER INTERFACE–Continued

Display Unit (DU) Interface.   The DU to PU interface is the conduit for several types of data: video/graphics, keyboard, touch-screen, power, and discrete signals. Interface is between the DU J1 connector and PU J4 connector using a W2 cable.

Keyboard Interface.   The keyboard controller provides the interface to the detachable QWERTY keyboard, the embedded pointing device, the alarm circuitry and the status indicators. The keyboard is a membrane switch assembly. The DU provides one connector for connection to the keyboard assembly. The Keyboard Unit end of the interface cable is hardwired to the Keyboard. The Keyboard Unit connects to J2 of the DU.

Intercom Interface.   AN/UYK-128(V) Computer audio output is connected in parallel with the headphone audio output via an adapter cable W4. The W4 cable connects to the Processor Unit via connector J2.

LAN Interface.   LAN interface is available at the Processor Unit via the J5 connector.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

TACTICAL INTERNET THEORY OF OPERATION

UPPER AND LOWER TACTICAL INTERNET OVERVIEW

The Tactical Internet (TI) consists of two primary segments, a Lower TI and an Upper TI. The Upper TI has a Near Term Digital Radio (NTDR) Network and a Mobile Subscriber Equipment (MSE) user switching communications system. This work package is a description of the Lower TI; hence, unless otherwise stated, any reference to the TI refers to the Lower TI. The Lower TI provides the digital communications capability for Brigade-and-Below elements not located at Tactical Operations Centers (TOCs). The Upper TI provides the mechanisms for digital communications between Brigades, above Brigades, and between TOCs at all echelons. The two segments of the TI are designed to provide seamless data transfer throughout the digitized battlefield. The relationship between the Upper TI and the Lower TI is shown in the figure below. At the lowest levels, communication is accomplished with SINCGARS Stub Nets. The EPLRS radios are used to provide the communications backbone within Battalions (BN) and across the Brigade. Each host connected to the TI regardless of its communication resources, has a unique Internet Protocol (IP) address, which uniquely identifies it to other hosts at the Open Systems Interconnection (OSI) network layer.

UPPER AND LOWER TACTICAL INTERNET OVERVIEW–Continued

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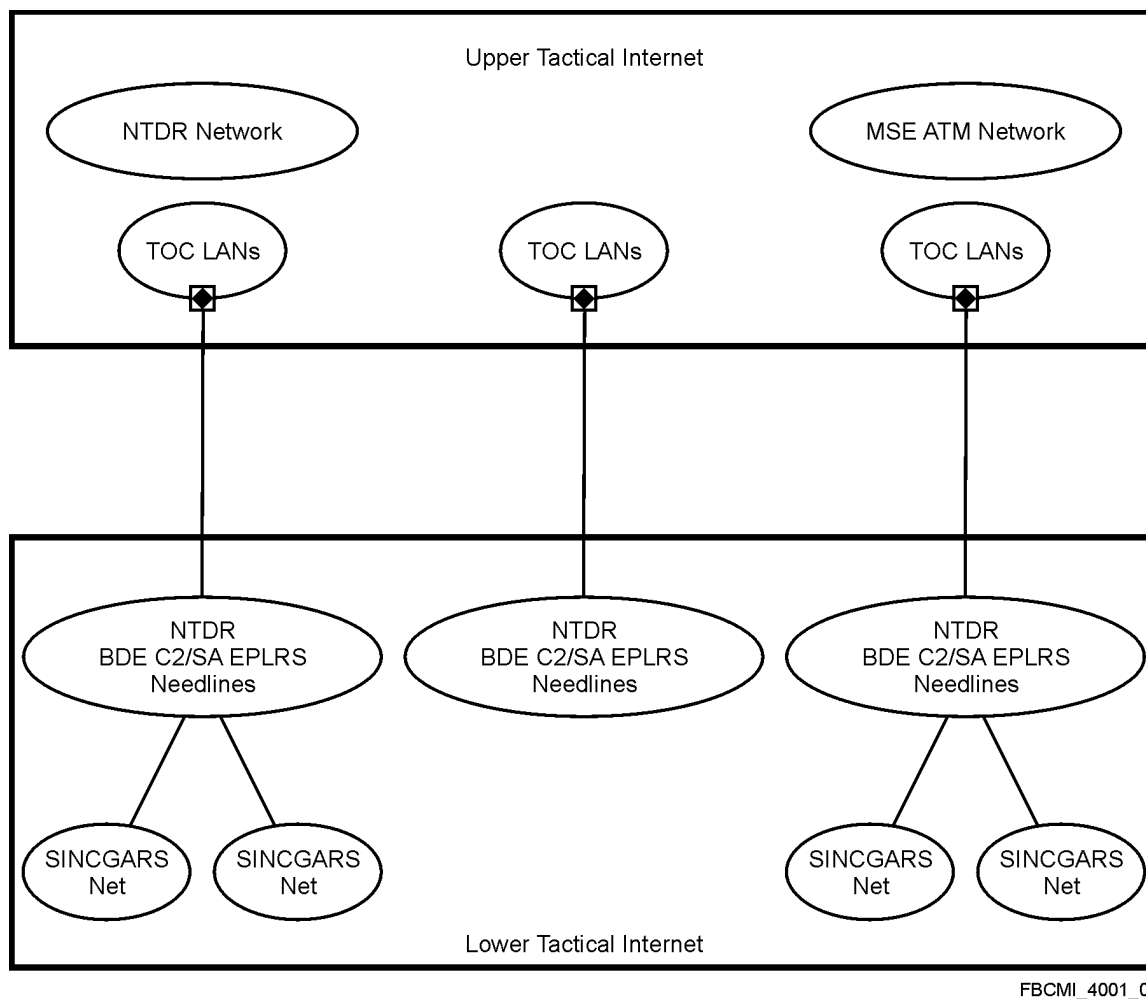
Figure 1   **TI Upper/Lower Architecture**

SA AND C2 DATA

The Tactical Internet is dynamic and will evolve with the phased development of the FBCB2 system. This section will define the hardware component parts as well as some of the software commands and routines used to provide Situational Awareness (SA) data and Command and Control (C2) information. SA includes friendly and unknown position reports. C2 includes alerts, warnings, and fire support information. Both C2 and SA data require the capability for timely and reliable exchange between a sender and recipient. Therefore, the TI must provide reliable message delivery despite mobility of units, battle stress, obscuring terrain, enemy interference, destruction of command posts loss of key elements and replacement of individual platforms or units. Since the TI is required to deliver messages reliably while incurring network losses due to battle damage, the loss of any one node will have no serious impact on the remaining network. Redundancy is provided to avoid single points of failure.

CONNECTIVITY

The TI provides the services to directly interconnect SA and C2 data among hosts within a Brigade (BDE) and to exchange SA and C2 data between and above BDEs. This data exchange is provided using broadcast, multicast and reliable unicast methods. The figure below shows the difference between multicast and unicast methods. The TI provides interfaces to all hosts with standard commercial Internet protocols. Some examples are: Point-to-Point Protocol (PPP) and Simple Network Management Protocol (SNMP).

CONNECTIVITY–Continued
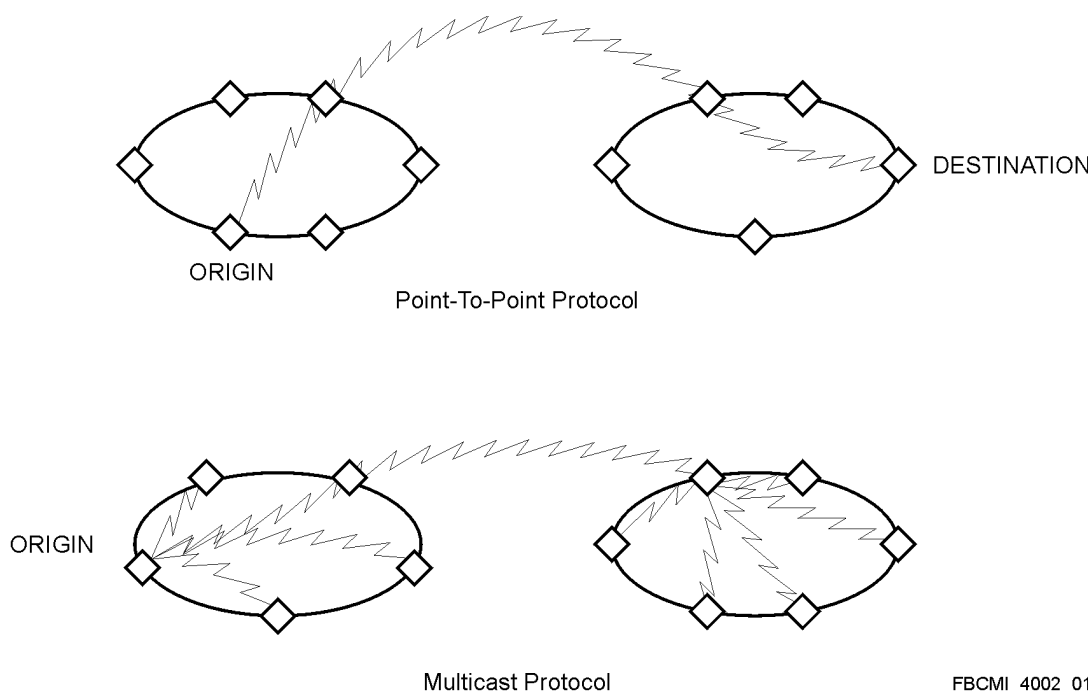
Figure 2 **Data Exchange Methods**

Point-to-Point Protocol (PPP).   PPP is a link layer protocol which is used to provide a standard mechanism for transporting IP datagrams over a point-to-point link. It uses High-level Data Link Control (HDLC)-like framing for encapsulation IP datagrams.

Internet Protocol/Internet Control Message Protocol (IP/ICMP).   IP/ICMP are network layer protocols used for the routing and delivery of all message types through the TI. ICMP is a user of IP, providing feedback about problems in the communication environment.

Simple Network Management Protocol (SNMP).   SNMP is an application layer protocol used to manage nodes (e.g., routers) in a network. The INC's receive all necessary router initialization data or changes to router initialization data from their local host via their PPP interfaces using SNMP. The host also determines router and local radio interface status via SNMP.

Organization Support.   To maneuvering platforms, the TI provides dynamic selection of SA servers and election of C2 gateways. This approach ensures that data can flow among the hierarchical nets in the event of loss of connectivity or if a server or gateway platform becomes inoperable. This provides the capability for hosts to change SINCGARS nets and EPLRS needlines to alter their configuration via host-initiated commands to the INC. With some limitations, the host retains C2 and SA connectivity. In the event of a task organization change, the TI design requires minimal change to platform configuration, which facilitates establishing digital communications in the new organization. Generally, platforms equipped with only a single SINCGARS radio (e.g., a wingman (WM) in a platoon (PLT) do not require a change in net identification (ID) as a result of Unit Task Reorganization (UTR). Platforms equipped with more than one SINCGARS (e.g. Platoon Leader (PL)) or company First Sergeant (ISG) only change the net ID of the radio on the higher echelon voice net. This means the router requires no re-configuration to retain SA and C2 connectivity. Organizational changes within a battalion require only changes in multicast group affiliation, changes of organizational relationships, and changes in voice radio net ID. Organizational changes between battalions, but within a brigade, will require changing multicast group affiliation, organizational relationships, voice radio net ID, and two EPLRS needlines. Organizational changes between brigades and within the division will require changing multicast group affiliation, organizational relationships, voice radio net ID, and four EPLRS needlines. The stimulus for a task organization change is a message distributed to all affected platforms, which then process the stimulus information and execute the necessary configuration changes.

CONNECTIVITY–Continued

System Functions.   The primary connectivity provided is for SA and C2 data within the brigade. The sources for this data are within the brigade, from other brigades, and echelons above the brigade. Additional functions consisting of exchange of reachability information, selection of position servers, and election of C2 gateways, are provided and are transparent to hosts.

INTERNET CONTROLLER (INC) INTERFACE

The INC provides the FBCB2 interface to the platform radio suite as a data subscriber, intra-net relay, or Internet routing. The mechanical connection employs 3 wires (two signal wires and a ground wire.). The interface operates at a data rate of 38.4 kbps Two ports are for operations with SINCGARS ASIP radios. One port is for operation with an EPLRS radio, TOC router, or a second host computer. Interface is between the INC J6 connector and SIAD J1 connector using a W3N cable, and SIAD P1 connector and the Processor Unit J3 connector using a W3 cable.

SINCGARS ADVANCED SYSTEM IMPROVEMENT PROGRAM (ASIP)

The SINCGARS ASIP is the Combat Net Radio (CNR) that supports both voice and data communications for Army war fighters in a tactical environment. For voice communications it's valuable to check line-of-sight situations and evaluate antenna operation. The SINCGARS ASIP also receives and transmits digital data within lower level battalion stub-nets. Platforms that use SINCGARS ASIP rely on the PLGR for time and location data.

Sincgars Hardware.   The SINCGARS ASIP Ground Radio system for vehicular installations includes the RT-1523E Receiver-Transmitter (RT) and the AM-7239E Vehicular Amplifier Adapter (VAA). The SINCGARS ASIP provides regulated power, a radio control interface and provisions for incorporation of the Internet Controller (INC) to support TI operations.

Sincgars SA Agents.   SINCGARS SA agents are incorporated by the INC to provide efficient handling of SA data over SINCGARS nets. The agent takes messages from a host and transmits the data portion of the IP packet over the SINCGARS net using a link level broadcast. There are typically two agents configured per SINCGARS net: one generally used for upward dissemination of SA data and one generally used for downward dissemination of SA data. These two agents are accessed via unique UDP port numbers in the UDP/IP header.

ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)

The EPLRS is a digital data radio system. Its primary components are the Network Control Station (NCS) and the EPLRS User Units (EPUUs). The NCS is the centralized control element used for system initialization, dynamic monitoring, and controlling the EPLRS network. The EPUU is the radio receiver-transmitter provided to the users. The FBCB2 system architecture utilizes EPLRS radios to provide Wide Area Network (WAN) connectivity from platoon level through brigade level. EPLRS utilizes the Army Data Distribution System Interface (ADDSI).

Each Radio Set (RS) can accept data from one computer (called a "host") and send that data over the air to one or more other computers via their attached radio sets. Each RS in the network is assigned time for short transmissions (called timeslots) during which it can transmit while other members receive. The radio sets are networked together under the control of a mobile NCS to provide automatic, jam-resistant relaying of host-to-host data throughout the network. The NCS provides integrated position location and navigation services to the user as well as communications assignments and keys to the RSs.

EPLRS Hardware.   The EPLRS consists of a Receiver/Transmitter (RT-1720B(C)/G or RT-1720C(C)G), input/output device (User Read Out (URO)), antenna (SV-RS), and a power source (vehicle).

EPLRS SA Agents.   EPLRS SA agents are incorporated by the INC to provide efficient handling of SA data over the EPLRS needline. The agent takes messages from a host and based on the User Data Protocol (UDP) port number in the UDP/IP header, directs the data portion of the IP packet to a corresponding needline (by Logical Channel Number (LCN)). Likewise, it takes data from the EPLRS radio and based on the LCN, directs the data to the host with a UDP port number that corresponds to the LCN.

NEEDLINES

Each particular "need to communicate" between two or more hosts is called a "needline," also known as a Logical Channel Number (LCN) or Permanent Virtual Circuit (PVC). There can be many needlines running on a radio set at one time, supporting the hosts' data communications needs. Needlines can be activated manually via the URO or host, or automatically by the host. The RS will automatically activate the needline if any data is received on the corresponding LCN. If the RS is turned off or power is lost, active needlines will be automatically reactivated when the RS is powered back on.

TYPES OF NEEDLINES

Virtual circuits, called needlines, are established between radios based on host data requirements. Once enable, the needlines are automatically maintained by the radios without operator or NCS intervention. There are six major types of needlines, each falling into the two major types of host-to-host services (many-to-many and one-to-one).

Point-to-Point (P-P) Needlines.   Provide unequal data transfer capability for two endpoints' hosts. Either endpoint can have all the data transfer capability, or it can be split between them in various ratios. Data is transferred at user data rates from 1200 bps each way to 56,000 bps all one way. Application of a P-P needline would be like talking to another person on a telephone.

Simplex (one-way) Needlines.   Provide a single host with the capability to send data to many hosts. For simplex needlines, data is transferred at user data rates from 160 to 3840bps. Application of a simplex needline would be like using a bullhorn to talk to many people at the same time that cannot talk back.

Carrier Sense Multiple Access (CSMA) Needlines.   Provide many hosts the capability to send data to each other. For CSMA needlines, data is transferred at user data rates from 1200 to 56,000bps (for the whole needline). The RS ensures there are no other RSs using the CSMA needline (carrier sense) and then sends data from the host. When completed, another RS will ensure no other RSs are using the needline and then transmit, and so on. This protocol allows many endpoints' hosts (multiple access) to use the same CSMA needline to send data to one or more endpoints' hosts. Application of a CSMA needline would be like a group of people on a contention voice net, each speaking when they have something to say and no one else is speaking.

MultiSource Group (MSG) Needlines.   Provide up to 16 hosts the capability to send data to many hosts. MSG needlines provide each source host guaranteed bandwidth without conflict, with user data rates from 150 bps to 56,000 bps. Data transferred from one source also goes to the other sources. If fewer sources are used, the sources can have more than 1/16th of the data transfer capability. Each 1/16th is called a share. For example, a source endpoint can be assigned to have 4/16ths of the total MSG data transfer capability, with 12 other source endpoints each having 1/16th of the total MSG data transfer capability. If there are unused shares, an RS whose host load is larger than it's assignment on the MSG needline will use these available shares. The more shares an RS had, the more data transfer capability it has. The RS also supports eight- and four-share MSG needlines that provide faster speed of service. Application of an MSG needline would be like 16 people with bullhorns talking, in a round robin fashion, to many people who cannot talk back. An MSG needline is similar to a CSMA needline, but each sender has a dedicated. Guaranteed amount of time to talk (similar to many concurrent simplex needlines).

Duplex (two-way) Needlines.   Provide radio-acknowledged, higher reliability, balanced data transfer between two hosts with data rates from 20 bps to 1920 bps each way. They provide equal data in both directions. This data transfer capability may be used by either or both endpoints. The endpoint RSs will automatically ensure that the data is all delivered using RS-to-RS acknowledgement protocols. This needline type required pre-planning in the NCS by SYSCON for the RS to be able to use. Application of duplex needline would be like talking to another person on a telephone.

Dynamically Allocated PVC (DAP) Needlines.   DAP needlines are a special type of duplex needline. They have capabilities similar to those of duplex needlines (rates are 60 bps to 1920 bps), but DAP needlines are automatically set up and detected on demand by the host, without any preplanning or NCS involvement. However, if the network resources are not available to support the data rate requested by the host, the needline rate is reduced to the highest rate available that the RS can support.

High Data Rate (HDR) Duplex Needlines.   Have the same features as duplex needlines except that data rates are higher from 1200 bps to 28,500 bps each way. Application of a HDR duplex needline would be like talking to another person on a telephone.

NETWORK CONTROL STATION (NCS) FUNCTIONS

The NCS provides the RSs with keys for advance and needline parameters and responds to requests for position, location, and limited navigation. In order to provide these services, each RS must be in a network controlled by a NCS. If an RS cannot be in such a network, the RS enters a Track network, if possible.

Needline Parameters.   When the RS receives a request to activate a needline that has not been activated before; the RS forwards that request to the NCS. The NCS then sends the needline parameters to the RS.

NEAR TERM DIGITAL RADIO (NTDR)

The NTDR (RT-1812(C)/U) supports the routing of data within the network. Transmitted data is encrypted, protected with forward error correction and detection codes, and then modulated onto an RF carrier. Received data is recovered following the same processes in reverse. The NTDR operates in a frequency band of 225 to 450 MHz in discrete tuning steps of 0.625 MHz.

NETWORK CHECKING

The Operators Manual, TM 11-7010-326-10 contains all the instructions for checking the local communications equipment. The Systems Tab allows checking of the GPS (PLGR), Local Area Network (LAN), router, and radios (both SINCGARS and EPLRS). There is an SA Tab for checking the current SA server, your net data, and status of the CSMA assigned at Battalion or Brigade level.

END OF WORK PACKAGE

CHAPTER 2

UNIT MAINTENANCE

TROUBLESHOOTING PROCEDURES

FOR

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW (FBCB2)

CHAPTER 2

UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES

WORK PACKAGE INDEX

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

TROUBLESHOOTING INDEX

TROUBLESHOOTING INDEX

The purpose of the troubleshooting index is to provide a listing of equipment faults and/or indications and reference the appropriate work package to perform the necessary troubleshooting procedures. Perform the troubleshooting and corrective action as described.

Display Unit BIT Diagnostics.   The AN/UYK-128(V) Computer has Built-In-Test (BIT). The main window to this testing is the DU lights. Interpretation of these lights is important. The following is an explanation of the display diagnostics and what they mean to the maintainer. Refer to Unit Power (PWR) LEDs, Display Unit (DISP) LEDs, and Processor Unit (CPU) LEDs tables below.

NOTE

In normal operation, only one LED in each group of three will be lit or blinking.

Table 1. Display Unit Controls And Indicators Panel Power (PWR) LEDs

LED	CONDITION
Green	Power ON, no problems detected.
Blinking Green	Heater ON.
Amber	Power supply output voltage out of acceptable range (PU power).
Blinking Amber	Undefined.
Red	Loss of vehicle power, running on internal battery. Display will operate at reduced brightness.
Blinking Red	Input power out of acceptable range (vehicle power)..

Table 2. Display Unit Controls And Indicators Panel (DISP) LEDS

LED	CONDITION
Green	Display Unit OK.
Blinking Green	Heater ON.
Amber	Overheat, operating at reduced brightness.
Blinking Amber	Communications error (Problem at the Display Unit).
Red	Overheat, Display Unit shutdown or failure.
Blinking Red	Built In Test (BIT) Failure detected.

TROUBLESHOOTING INDEX–Continued

Table 3. Display Unit Controls And Indicators Panel Processor Unit (CPU) LEDS

LED	CONDITION
Green	Processor Unit OK.
Blinking Green	Heater ON.
Amber	Degraded Processor Unit operation - Temperature Warning.
Blinking Amber	Communication error (No message from Processor Unit).
Red	Processor Unit shutdown or failure.
Blinking Red	Power-On-Self-Test (POST) problem.

Diagnostics Display Priorities.   Multiple conditions may exist in the display simultaneously. For instance, there may be a BIT failure (blinking red) when heaters are on (blinking green). Heater display will take priority over the BIT display. The LED displays are prioritized. Refer below for DU LED BIT priority listing.

Table 4. DU LED BIT Priority

LED	CONDITION
Red	Back light shutdown.
Amber	Reduced back light.
Blinking Green	Heater ON.
Blinking Amber	Communication error.
Blinking Red	BIT failure.
Green	Normal operation.

BIT Display For DU NSN 7025-01-475-0229 And DU NSN 7025-01-475-0282.   If the DU controls and indicator panel DISP Red LED or Yellow LED is blinking, a BIT diagnostic display pattern can be shown on the LEDs. To initiate the BIT diagnostic display, press both the BRT+ and BRT- for 2 seconds. For 6 seconds, the 9 LEDs will show a pattern indicating all the BIT errors detected. Refer below for DU BIT diagnostic display.

NOTE

If the +12V is missing, both the Fan error and Heater error LED will light.

Table 5. BIT Diagnostic Display

COMPONENT	COLOR	CONDITION
Power	Red	Fan error.
	Yellow	Heater error.
	Green	Sensor error.
Display	Red	No Hsync detected (no video).
	Yellow	Stuck key.
	Green	EEPROM write error.
Processor	Red	Serial buffer overflow.

TROUBLESHOOTING INDEX–Continued

Table 5. BIT Diagnostic Display–Continued

COMPONENT	COLOR	CONDITION
	Yellow	Serial port framing error.
	Green	Undefined. Always off.

Power-On-Self-Test (POST) LED CHECK for PU NSN 7021-01-475-0217.   After startup, observe the POST LED illuminates GREEN.

1. Open the Access Door of the PU as shown in the figure below.
2. Note that the LED is GREEN, which indicates that the PU passed the POST.
3. If the LED is not illuminated then, proceed to the Troubleshooting Index.
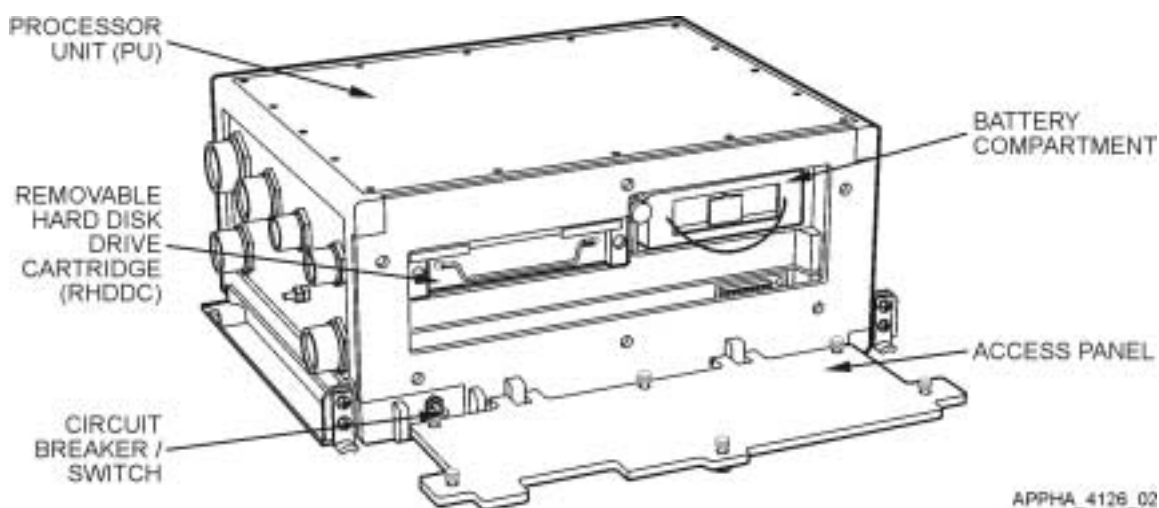
Figure 1   **Processor Unit Post LED Indicator**

Hour Meter for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.   The hour meter displays the accumulated system hours when the system is in the power on state. The hours meter is located under the RHDDC retaining latch.

Processor Unit Diagnostics for PU NSN 7021-01-474-3793/ NSN 7021-01-487-0578.   In this PU, the hours and display diagnostics (See figure below) are located on the battery tray behind the access door. This device serves as an Hour Meter and as a Diagnostic Indicator. The 9V non-rechargeable battery in the battery assembly powers the Liquid Crystal Display (LCD). If the LCD becomes hard to read or disappears completely, the 9V battery may require replacement.
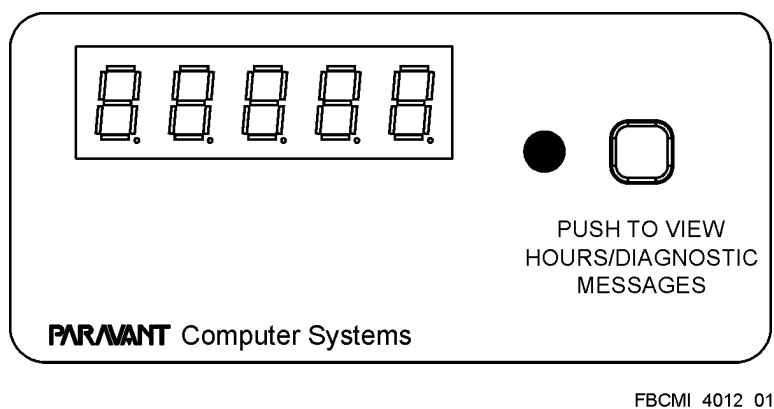
TROUBLESHOOTING INDEX–Continued

FBCMI_4012_01

Figure 2 **Hours and Diagnostics Indicator**

Hours Meter Mode for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578.   Press the push button once to read the system hours. The hour meter only displays the accumulated system hours when the system is in the power on state. The display goes blank in 2 seconds.

NOTE

The intensity of the display is slightly lower when the system is off.

Diagnostic Indicator Mode for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578.   This mode is only available after powering on the system. Press the button once to display the system hours, press it again before the display timeout to view the diagnostic code (dC), press the button again to view the BIOS Power-On Self Test (POST) code. The display goes blank in 2 seconds and defaults to display the system hours when the button is pressed. The dC code 00 indicates normal operation. A diagnostic code 07 indicates a POST failure, and the Fault at POST (FP) code displays the active POST Code error. The FP code 00 indicates normal operation. The illuminated green LED indicates normal operation.

The figure below illustrates the label located inside the Processor Unit's removable hard drive access door which describes the diagnostic codes. Refer to the Table below for an explanation of the diagnostic codes.

FBCMI_4013_01

Figure 3 **Diagnostic Code Label**

Diagnostic Message for PU NSN 7021-01-474-3793/NSN 7021-01-4787-0578.

TROUBLESHOOTING INDEX–Continued

Table 6. Diagnostic Codes

CODE NO.	FAULT/INDICATION	CONDITION
01	PU Over Temperature	Indicates the PU is shutdown due to internal overheating.
02	Power Supply Fault	Indicates that one of the internal CPU voltages (3.3, 5, 12) is out of range.
03	DU Communication Failure	Indicates the PU has not received a response from the DU.
04	Vehicle Power Fault	Indicates the external power voltage is out of range.
05	Backup Battery Low	Indicates the battery voltage reading is low.
06	PU Degraded Operation	Indicates that the CPU has engaged the Clock throttling mode; correlates to the indicator in the DU "CPU solid amber"-
07	BIOS POST fault	Indicates that the CPU BIOS Power-On Self Test did not complete successfully.
08	PU Heater On	Indicates that during a cold boot at a low temperature the PU has enabled the self -heating cycle before booting up the computer.
d1	DU Over Temperature or Critical Fault	Indicates that DU has shutdown.
d2	DU Warning: No Video or Non-Critical Fault	Indicates the DU has sent a warning message to the PU due to not detecting video or a non-critical internal DU fault.
d3	DU Degraded Operation	Indicates that the DU has decreased the brightness intensity.
d4	DU Heater On	Indicates that the DU has enabled a self -heating cycle when operating at a low temperature.

Be sure to follow all WARNINGS and CAUTIONS presented for appropriate troubleshooting procedures. The format applied to the troubleshooting procedures is as follows:

1. Symptom. This describes the problems reported by the operator. There are some variations of the same problem to help the maintainer troubleshoot a variety of conditions.
2. Malfunction. This describes the problem in greater detail reported by the operator. This describes the methods used in the analysis of the problem. These are tests or inspections used to determine which LRU may be at fault.
3. Corrective Action. This informs the maintainer what action should be taken to resolve the problem or progress to the next step. Use FUNCTIONAL CHECK to verify that problem has been resolved.

Malfunction/Symptom   Troubleshooting Procedure

LOSS OF POWER TROUBLESHOOTING

1. AN/UYK-128(V) Computer circuit breaker/switch trips ....WP 0006 00
2. LED PWR indicators are not illuminated...WP 0006 00
3. AN/UYK-128(V) begins power up and then shuts down. ....WP 0006 00
4. PWR LED red light is blinking. ....WP 0006 00

BOOT-UP TROUBLESHOOTING

5. The AN/UYK-128(V) DU screen displays the following message: INIT: Command is respawning too rapidly. Check for possible errors...WP 0007 00
6. AN/UYK-128(V) Computer DU displays: Operating system not found.......................................WP 0007 00
7. AN/UYK-128(V) Computer DU displays: Disk boot failure, insert system disk and press enter or no operating system found, or drive not responding...WP 0007 00
8. System boots to blue license screen and stops..WP 0007 00

BOOT-UP TROUBLESHOOTING–CONTINUED

LOSS OF TIME/LOCATION TROUBLESHOOTING

PROCESSOR UNIT TROUBLESHOOTING

DISPLAY UNIT TROUBLESHOOTING

KEYBOARD UNIT/MOUSE TROUBLESHOOTING

Malfunction/Symptom   Troubleshooting Procedure

KEYBOARD UNIT/MOUSE TROUBLESHOOTING–CONTINUED

END OF WORK PACKAGE

Malfunction/Symptom   Troubleshooting Procedure

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

LOSS OF POWER TROUBLESHOOTING PROCEDURE

INITIAL SETUP:

TROUBLESHOOTING

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

NOTE

If the internal battery has been run-down, AN/UYK-128(V) Computer will not remain on when power is interrupted. When the external power problem has been resolved, AN/UYK-128(V) Computer must be operated for eight (or more) hours to recharge the internal battery.

NOTE

Use Multimeter AN/PSM-45A (or equivalent) to measure voltages. When troubleshooting AN/UYK-128(V) Computer, if a cable problem is suspected, refer to the cable data (WP , Cable-to-Platform Matrix) for the specific platform you are working on. The illustrations at the end of work package 0026, contain all the cable information required for troubleshooting. The quickest way to resolve a cable problem is replacement. If a replacement is not available, refer to the cable data (WP , Cable-to-Platform Matrix) to locate the wiring diagram, use the multimeter to check the cable for continuity, and verify there are no shorts between wires and/or shielding. Any opens or shorts will require cable replacement.

TROUBLESHOOTING PROCEDURE

LOSS OF POWER TROUBLESHOOTING

SYMPTOM

AN/UYK-128(V) Computer circuit breaker/switch trips.

MALFUNCTION

AN/UYK-128(V) Computer fails to power up.

CORRECTIVE ACTION

1. Verify that power cable W1 is properly connected. Secure loose or unconnected W1 power cable.

2. Verify that W2 cable between DU and PU is properly connected. Secure loose or unconnected W2 cable.

3. Has the PU circuit breaker opened? Reset PU circuit breaker/switch. (Set to OFF, then back to ON.) If circuit breaker fails to set, replace PU.

SYMPTOM

LED PWR indicators are not illuminated.

MALFUNCTION

AN/UYK-128(V) Computer does not turn on.

CORRECTIVE ACTION

1. Verify W1 and W2 cables are properly connected. Secure loose or unconnected cable(s).

2. Is the vehicle power source activated? Switch on all applicable controls. Examples:

    a. M1068/M934/M1097/M113 -SINCGARS ASIP R/T display is illuminated.

    b. Tracked Vehicles with AM 1780/VRC intercom box and AM 7239E/VRC (VAA). Ensure that the AM 1780/VRC intercom box, main power switch is set to ON and function switch is set to NORM.

    Ensure that the AM 1780/VRC (VAA) S-1 Local/Remote switch is set to Remote (RMT).

    c. Paladin/Master Power switch set to ON

3. Does the vehicle have power? Start vehicle. If vehicle will not start, contact vehicle maintenance.

4. Disconnect W1 power cable from J1 of the PU.

5. Use the AN/PSM-45A (DVM) to check for +22 VDC to +32 VDC at the open end of the W1 cable. (Pins A, B, & C are +22 VDC to +32 VDC. Pins D, E, & F are RET.

    a. If correct (+22 VDC to +32 VDC) voltage is not present, check at source (vehicle connection). If +22VDC to +32 VDC is not present , call for vehicle maintenance.

    b. If +28V is present, W2 cable may be checked as follows: disconnect cable W2, use the AN/PSM-45A (DVM) to check continuity between pin 19 of W2-P1 and pin 19 of W2-P2. If there is no continuity, replace W2.

6. Reconnect power cable to J1 of the PU.

7. Disconnect W2P1 from J4 connector of the PU.

8. Disconnect the W2-P2 connector from J1 of the display.

9. Check W2 cable for damage. Check W2 cable continuity per cable wiring diagram.

    a. If W2 cable does not pass continuity check, replace W2 cable.

    b. W2 cable OK, replace DU.

    c. DU OK, replace PU.

SYMPTOM

AN/UYK-128(V) begins power up and then shuts down. (DU PWR LED lights momentarily.)

MALFUNCTION

AN/UYK-128(V) fails to power up.

CORRECTIVE ACTION

Reboot system to verify fault. Check vehicle power. Vehicle power is below 18 VDC, call vehicle maintenance. If vehicle power is OK, replace PU.

SYMPTOM

PWR LED red light is blinking.

MALFUNCTION

Reboot system to verify fault.

CORRECTIVE ACTION

Check vehicle power to ensure it is not below 18VDC. IF vehicle power is OK, replace PU.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
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COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

BOOT-UP TROUBLESHOOTING PROCEDURE

INITIAL SETUP:

TROUBLESHOOTING

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

NOTE

If the internal battery has been run-down, AN/UYK-128(V) Computer will not remain on when power is interrupted. When the external power problem has been resolved, AN/UYK-128(V) Computer must be operated for eight (or more) hours to recharge the internal battery.

NOTE

Use Multimeter AN/PSM-45A (or equivalent) to measure voltages. When troubleshooting AN/UYK-128(V) Computer, if a cable problem is suspected, refer to the cable data (WP , Cable-to-Platform Matrix) for the specific platform you are working on. The illustrations at the end of work package 0026, contain all the cable information required for troubleshooting. The quickest way to resolve a cable problem is replacement. If a replacement is not available, refer to the cable data (WP) to locate the wiring diagram, use the multimeter to check the cable for continuity, and verify there are no shorts between wires and/or shielding. Any opens or shorts will require cable replacement.

TROUBLESHOOTING PROCEDURE

BOOT-UP TROUBLESHOOTING

SYMPTOM

The AN/UYK-128(V) DU screen displays the following message: INIT: Command is respawning too rapidly. Check for possible errors.

MALFUNCTION

The computer fails to boot-up.

CORRECTIVE ACTION

1. Press DU PWR button for up to 4 seconds until the PWR green LED goes dark to shut down the AN/UYK-128(V) Computer.

2. Verify the Keyboard cable is connected.

    a. If not connected, reconnect.

    b. Power up AN/UYK-128(V) Computer. Problem solved. If not, replace KU.

SYMPTOM

AN/UYK-128(V) Computer DU displays: Operating system not found.

MALFUNCTION

The AN/UYK-128(V) fails to boot-up.

CORRECTIVE ACTION

1. Power down PU and check that RHDDC is installed. Reset RHDDC. Restore power and check operation. Problem solved. If not, continue.

2. Replace RHDDC. Problem solved. If not, replace PU.

SYMPTOM

AN/UYK-128(V) Computer DU displays: DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER or NO OPERATING SYSTEM FOUND, or DRIVE NOT RESPONDING.

MALFUNCTION

The computer fails to boot-up.

CORRECTIVE ACTION

1. Perform system shut-down IAW TM 11-7010-326-10 or TB 11-7010-326-10.

    a. After shut-down, and 10 second spin down, reseat RHDDC.

    b. Restore power and check operation. Problem resolved. If not, continue.

2. Replace RHDDC. Problem resolved. If not replace PU.

SYMPTOM

System boots to blue license screen and stops.

MALFUNCTION

The computer fails to boot-up.

CORRECTIVE ACTION

1. Try rebooting the AN/UYK-128(V) Computer. The AN/UYK-128(V) Computer functions correctly - problem is resolved. If not, continue.

2. Power-down computer and replace PU. Repeat power-up procedure. Computer functions correctly - problem solved. If not, continue.

3. Power-down computer and change cable W2. Repeat power-up procedure. Computer functions correctly - problem solved. If not, continue

4. Power-down computer and change DU.

SYMPTOM

AN/UYK-128(V) Computer locks up after blue license screen, Display blank.

MALFUNCTION

The computer fails to boot-up.

CORRECTIVE ACTION

1. Try rebooting the AN/UYK-128(V) Computer. Rebooting solves problem. If not continue.

2. Shut down AN/UYK-128(V) Computer. Reseat KU cable. Repeat power-up procedure. Computer functions correctly - problem solved. If not continue.

3. Verify BIOS. Problem solved. If not continue.

4. Shut down AN/UYK-128(V) Computer. Replace KU and reboot. Problem solved - if not continue.

5. Shut down AN/UYK-128(V) Computer. Remove and replace RHDDC.

SYMPTOM

The AN/UYK-128(V) PU FBCB2 software locks-up or continually reboots

MALFUNCTION

The computer fails to boot up.

CORRECTIVE ACTION

1. Try rebooting the AN/UYK-128(V) Computer. System now operates properly, problem solved. If not, continue.

2. Press DU PWR button for up to 4 seconds until the PWR green LED goes dark to shut down the AN/UYK-128(V) Computer.

   a. Open PU access door and verify RHDDC is properly seated. If not, reseat. If properly seated, replace RHDDC.

   b. Repeat power-up procedure. AN/UYK-128(V) Computer functions correctly - problem solved. If not, continue.

3. Check KU cable.

   a. If KU cable not connected, power down the AN/UYK-128(V) Computer. Reconnect KU cable and continue. If connected, replace KU.

   b. Repeat power-up procedure. The AN/UYK-128(V) Computer functions correctly - problem is resolved. If not, continue.

4. Power down the AN/UYK-128(V) Computer and replace PU. Repeat power-up procedure. Computer functions correctly - problem solved. If not, continue.

5. Power down the AN/UYK-128(V) Computer and replace W2. Repeat power-up procedure. Computer functions correctly - problem solved. If not, continue.

CORRECTIVE ACTION–Continued

6.   Power down the AN/UYK-128(V) Computer and replace DU.

SYMPTOM

PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 boots to diagnostic screen.

MALFUNCTION

The AN/UYK-128(V) fails to boot up.

CORRECTIVE ACTION

1.   Verify RHDDC is present.

    a.   If RHDDC is present, power down system and reseat RHDDC. Restore power and check operation. Problem solved. If not, check BIOS.

    b.   If RHDDC is missing, power down and install RHDDC. Restore power and check operation. Problem solved. If not, continue.

    c.   Replace RHDDC. Problem solved. If not, replace PU.

SYMPTOM

PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 boots to diagnostic screen and stops

MALFUNCTION

AN/UYK-128(V) Computer fails to boot up.

CORRECTIVE ACTION

1.   Refer to BIOS repairs for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 .

SYMPTOM

PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 ram count displayed and boot-up process stops

MALFUNCTION

AN/UYK-128(V) Computer fails to boot up.

CORRECTIVE ACTION

1.   Refer to BIOS repairs for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.

SYMPTOM

PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 Display message: Non-System disk or disk error - replace and press any key.

MALFUNCTION

AN/UYK-128(V) Computer fails to boot up.

CORRECTIVE ACTION

1.   Verify RHDDC is present.

    a.   If RHDDC is present, power down system and reseat RHDDC. Restore power and check operation. Problem solved. If not, check BIOS.

    b.   If RHDDC is missing, power down and install RHDDC. Restore power and check operation. Problem solved. If not, continue.

    c.   Replace RHDDC. Problem solved. If not, replace PU.

SYMPTOM

PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 screen message, Non-System disk or disk error - replace and press any key.

MALFUNCTION

AN/UYK-128(V) Computer fails to boot up.

CORRECTIVE ACTION

1.   Refer to BIOS repairs for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.

SYMPTOM

PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 ram count displayed and boot-up process stops

MALFUNCTION

Ram count displayed and boot-up process stops

CORRECTIVE ACTION

1.   Refer to BIOS repairs for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

LOSS OF TIME/LOCATION TROUBLESHOOTING PROCEDURE

INITIAL SETUP:

TROUBLESHOOTING

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

NOTE

If the internal battery has been run-down, AN/UYK-128(V) Computer will not remain on when power is interrupted. When the external power problem has been resolved, AN/UYK-128(V) Computer must be operated for eight (or more) hours to recharge the internal battery.

NOTE

Use Multimeter AN/PSM-45A (or equivalent) to measure voltages. When troubleshooting AN/UYK-128(V) Computer, if a cable problem is suspected, refer to the cable data (WP , Cable-to-Platform Matrix) for the specific platform you are working on. The illustrations at the end of work package 0026, contain all the cable information required for troubleshooting. The quickest way to resolve a cable problem is replacement. If a replacement is not available, refer to the cable data (WP) to locate the wiring diagram, use the multimeter to check the cable for continuity, and verify there are no shorts between wires and/or shielding. Any opens or shorts will require cable replacement.

TROUBLESHOOTING PROCEDURE
LOSS OF TIME/LOCATION TROUBLESHOOTING
  SYMPTOM

GPS status indicator is red.

    MALFUNCTION

Display Unit indicates loss of time/location.

      CORRECTIVE ACTION

WARNING

The BA-5800/U is a lithium battery that can leak or explode when left in PLGR with external power cable connected. Remove battery prior to connecting power cable.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

NOTE

Ensure AN/UYK-128(V) and PLGR power is turned off before connecting cables.

NOTE

Check to ensure PLGR I/O is set to Standard before performing serial port test step e.

NOTE

Before proceeding with the steps below, check to ensure that nothing is blocking the PLGR antenna. The PLGR relies on line-of-sight operation. Buildings, trees, camouflaging, or any elevated terrain, will require vehicle relocation.

NOTE

If PLGR I/O mode was changed to perform test, reset to original setting.

1. Reboot AN/UYK-128(V) Computer. GPS Status indicator in Ops screen is green. Problem solved. If not, continue.

2. Select Status (F5) button in OPS screen. Open GPS folder and check Time, Position, and Heading status. If any one of the three are Go, proceed to step.

3. Check PLGR setup.

   a. PLGR setup is as follows:

      (1) Almanac age of at least 3 days.

      (2) TFOM of 5 or less.

CORRECTIVE ACTION–Continued

        (3) FOM of 4 or less.

        (4) Setup Mode: cont.

        (5) SV-Type: all-Y

        (6) Setup units: L/L dms.

    b.   Setup is incorrect, apply settings. Problem solved. If not, proceed to step 4.

    c.   Setup is correct, proceed to step 5.

4.   Shut down AN/UYK-128(V) Computer and PLGR IAW Pocket Guide TB 11-7010-326-10.

    a.   Remove all connections to PLGR. Install PLGR BA-5800/U Lithium power battery. Re-initialize PLGR to work from internal power. Move PLGR to an outside location and allow it time to track satellites. Tracking time is 6 to 30 min. PLGR is operational. Proceed to step 7. If not operational, replace PLGR.

    b.   Remove BA-5800/U battery. Proceed to step 5.

5.   Install loop-back test connector on PLGR J2 connector. Activate PLGR.

    a.   At the end of PLGR startup self-test, ensure all PLGR settings are correct as follows:If not correct, apply correct settings

        (1) SETUP MODE: CONT

        (2) SV-TYPE: ALL-Y

        (3) SETUP UNITS L/L-dms

    b.   Press MENU button until you see STATUS blinking in upper left corner of screen. Press down arrow 3 times until SERIAL is displayed in lower half of screen. Across from SERIAL should read active. If unit reads none, ensure loop back test connector is properly seated. If not, turn off PLGR, reseat and turn PLGR ON. PLGR reads active, continue with step 6. If PLGR reads none, replace PLGR.

6.   With the PLGR still ON remove the Loop-Back test connector. The SERIAL should go from active to none. If PLGR is operational, continue with step 9. If not, replace PLGR. Problem solved.

7.   Use AN/PSM-45A multimeter to check PLGR antenna cable. PLGR antenna cable open or intermittent. Replace antenna cable. PLGR antenna cable checks OK, replace PLGR antenna. If antenna and antenna cable check OK, continue with step 8.

8.   PLGR, antenna cable, and antenna are now verified. Original symptom persists. Check serial interface data cable connections (between the PLGR (W3P), SIAD (W3) and Processor Unit for physical damage (cable and connector pins). Scorched or burnt pins indicate a possible bad PU serial port. Use AN/PSM-45A multimeter to check for shorts/opens.

    a.   If the W3P has an internal short/open, change the cable.

    b.   If the W3P is good, check the SIAD adapter for shorts/opens. If the W3P cable and W3 SIAD adapter do not indicate a short/open, replace the PU.

SYMPTOM

Comm Status is A (amber),R (red), G (green) and icons are stale or has self icon only.

MALFUNCTION

Message data not transmitted or received.

CORRECTIVE ACTION

NOTE

Ensure system has had enough time to enter the network.

1. Verify Role ID not set to Generic. If not properly set, reconfigure Roll . Problem solved. If not, continue.

2. Verify Server is operational. If operational, continue.

3. Check Filter setting. If incorrect set to proper setting. If correct, continue with step 4.

4. Verify that operator has re-initialized AN/UYK-128(V) Computer, SINCGARS, INC, and EPLRS. Do not shut down PLGR. If not then follow specific shutdown procedures for AN/UYK-128(V) Computer, SINCGARS and EPLRS (when applicable). Continue with step 5.

5. Re-initialize, first radios, then AN/UYK-128(V) Computer.

    a. Message data is transmitted/received.

    b. If message data is not transmitted and/or received, go to step 6.

6. Select Status (F5) button on Ops screen.

7. Open Local Comm folder and check router status. If router status shows No Go or Degraded, open router folder.

    a. Proceed to step 8 if PPP is No Go.

    b. Proceed to Symptom Comm status amber if SINCGARS status is shown degraded.

    c. Proceed to Symptom SINCGARS status is No Go.

    d. Proceed to Symptom EPLRS status is No Go.

8. Shutdown INC and AN/UYK-128(V) Computer. Disconnect W3N connector from INC J6 connector. Inspect W3N connector to ensure it is not corroded or missing O-ring. Clean and/or replace O-ring as required. Reconnect W3N connector to J6 INC connector. Reapply power to INC and AN/UYK-128(V) Computer. Wait 2 to 3 minutes - problem solved. If not, continue.

9. Perform procedure to clear INC. Problem solved. If not, continue to step 10.

10. Perform continuity check on W3N and W3 SIAD cables. If continuity is not present for W3N cable, replace W3N. If continuity for W3 SIAD is not present, replace W3 SIAD. If continuity is present for both cables, replce PU. If problem not solved, replace INC.

SYMPTOM

Comm status amber.

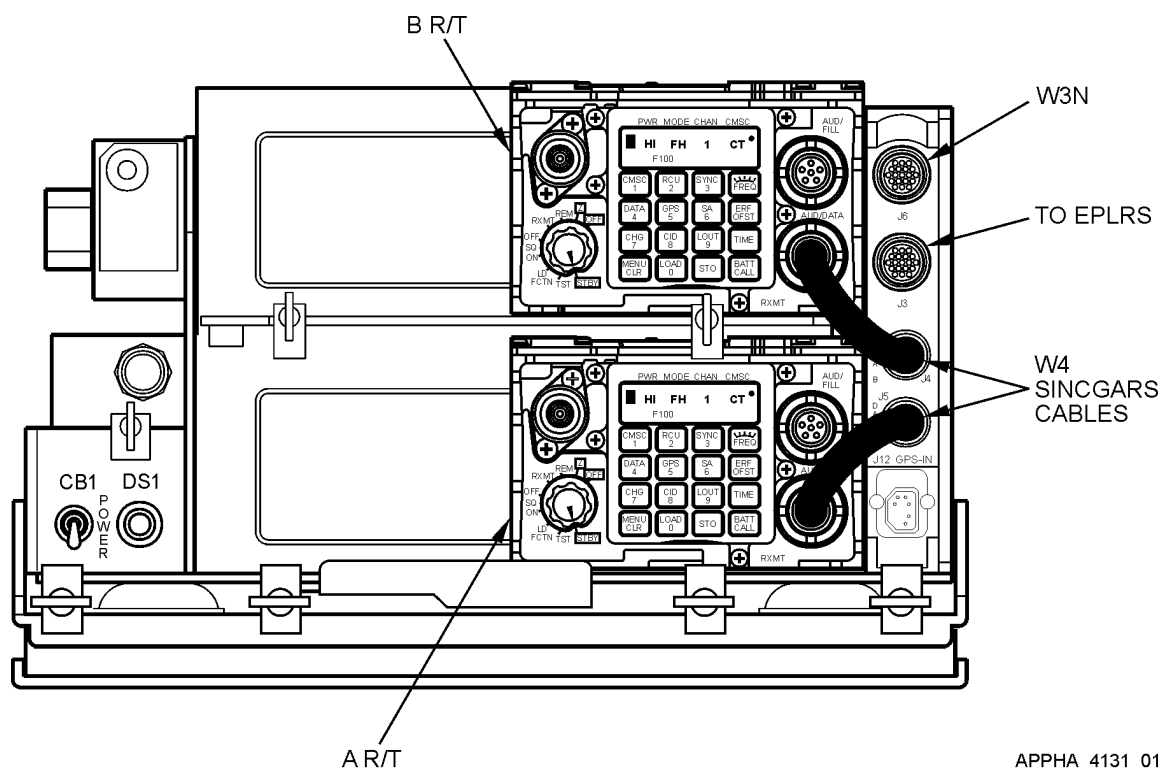### MALFUNCTION

Degraded SINGARS radio.

CORRECTIVE ACTION

NOTE

You will get degraded interface if you are the only one up in the net and all of your other settings are correct.

1. Ensure SINCGARS R/T is set to Channel 1, Mode to FH, COMSEC to CT. Reset SINCGARS R/T to proper settings. Problem solved. If not, continue to step 2.

CORRECTIVE ACTION–Continued

2. Check to ensure SINCGARS R/T W4 cable is properly connected. (i.e., A R/T to A DATA connector.) (See Figure below.) If not properly connected, make corrections (check O-Ring and replace if necessary). Problem solved. If not, continue with step 3.

3. Perform SINCGARS R/T W4 continuity check. If continuity is present, proceed to step 4. If continuity is not present, replace W4.

4. Check to ensure Julian date and time is correct on R/T. If not properly set, correct setting. Problem solved. If not, continue with step 5.

5. Perform voice communication with other net members. If unable to communicate, refer to TM 11–5820–890–20–1 to check antenna cable, antenna, or SINCGARS ASIP for fault.

Figure 1 **SINCGARS ASIP and INC Corrections**

SYMPTOM

Comm status red.

MALFUNCTION

SINGARS radio.

CORRECTIVE ACTION

1. Expand SINCGARS file to show interface, Net ID/Frequency and Packet mode status.

   a. Proceed to step 2 for Interface No Go status

   b. Proceed to Symptom for Net ID/Frequency No Go status

   c. Proceed to Symptom Packet file is No Go.

   d. If all are No Go check R/T for fill.

CORRECTIVE ACTION–Continued

2.   Check SINCGARS ASIP R/T to ensure it is set to PCKT mode and Channel 1. Select STATUS and check: SINCGARS1 = R/T A is selected, or SINCGARS2 = R/T B is selected.

    a.   If not, set to PCKT mode and Channel 1, problem solved. If not, continue with b.

    b.   Check that correct SINCGARS ASIP R/T (A or B) is being used for FBCB2. If not, reconnect and ensure proper SINCGARS ASIP R/T setup - problem solved. If not, continue to c.

    c.   Check for loose, bad (corroded or missing O-ring) or missing VAA/INC W4 cable (The figure above), problem solved. If not, continue to d.

    d.   Reload COMSEC and attempt voice communication - problem solved. If not, troubleshoot SINC-GARS ASIP and/or antenna.

SYMPTOM

SINCGARS file Net ID/Frequency status is No Go.

MALFUNCTION

SINCGARS radio.

CORRECTIVE ACTION

1.   Check to ensure proper radio Net ID (SINCGARS ASIP R/T) and (FBCB2 Net ID) frequencies are set to the same frequency.

    a.   Change if not correct - Problem solved. If not, continue with b.

    b.   Reset RHDDC IAW 2-13. Problem solved. If not, replace RHDDC.

SYMPTOM

SINCGARS Packet file status is No Go.

MALFUNCTION

SINCGARS radio.

CORRECTIVE ACTION

1.   SINCGARS Packet file status is No Go.

    a.   Change SINCGARS ASIP R/T to PCKT mode - problem solved. If not, continue to b.

    b.   If SINCGARS ASIP R/T will not set to PCKT mode, replace RT. If it does set to PCKT mode, continue to c.

    c.   Attempt voice communication. Voice communication successful, problem solved. If not, troubleshoot SINCGARS ASIP and/or antenna cable and antenna.

SYMPTOM

EPLRS status No Go or not recieving SA or C2.

MALFUNCTION

EPLRS radio.

CORRECTIVE ACTION

NOTE

Following check is for platforms equipped with the EPLRS radio.

NOTE

Ensure system has had enough time to enter the network.

1. Expand EPLRS folder. LCNs status indicates No Go or Not Tested, continue. EPLRS out of Net light blinks once every second (cannot find network) or EPLRS alarm and out of net lights steady on. Proceed to step 2.

2. Check the following:

   a. Ensure EPLRS antenna is connected.

   b. Check to make sure COMSEC is keyed into EPLRS (perform test with URO to ensure that an @S or @C is returned). If not, load COMSEC.

3. EPLRS OUT OF NET light blinks once every 4 seconds (unit caught in a track net). Recycle EPLRS power. Problem solved. If not, use the URO to verify status of EPLRS and fix problem.

4. EPLRS appears to be operating correctly. Clear INC, cycle power on EPLRS radio, reload router. Problem solved. If not, Replace RHDDC.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

PROCESSOR UNIT TROUBLESHOOTING PROCEDURE

INITIAL SETUP:

TROUBLESHOOTING

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

NOTE

If the internal battery has been run-down, AN/UYK-128(V) Computer will not remain on when power is interrupted. When the external power problem has been resolved, AN/UYK-128(V) Computer must be operated for eight (or more) hours to recharge the internal battery.

NOTE

Use Multimeter AN/PSM-45A (or equivalent) to measure voltages. When troubleshooting AN/UYK-128(V) Computer, if a cable problem is suspected, refer to the cable data (WP , Cable-to-Platform Matrix) for the specific platform you are working on. The illustrations at the end of work package 0026, contain all the cable information required for troubleshooting. The quickest way to resolve a cable problem is replacement. If a replacement is not available, refer to the cable data (WP) to locate the wiring diagram, use the multimeter to check the cable for continuity, and verify there are no shorts between wires and/or shielding. Any opens or shorts will require cable replacement.

TROUBLESHOOTING PROCEDURE
PROCESSOR UNIT TROUBLESHOOTING
   SYMPTOM

DU **CPU** Amber LED light is illuminated.

      MALFUNCTION

Degraded PU operation - or temperature warning due to elevated temperatures. (PU is still operating.)

      CORRECTIVE ACTION

NOTE

PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 does not have cooling fins but surfaces must remain clear to radiate heat.

      1.   Verify that PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 cooling fins are clean and not blocked in any way.

         a.   If the cooling fins are still warm, a damp cloth may be used to cool the unit quickly.

         b.   If after 5 to 10 minutes of operation the **CPU** amber LED remains illuminated, replace the PU.

SYMPTOM

DU **CPU** red LED light is illuminated.

      MALFUNCTION

PU has failed or stopped

      CORRECTIVE ACTION

NOTE

PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 does not have cooling fins, surfaces must remain clear to radiate heat.

      1.   Shut down power. Verify that PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 cooling fins are clean and not blocked in any way.

         a.   Clear and clean cooling fins. Restore power and re-initialize cooled unit.

         b.   If Display Unit **CPU** red LED light remains illuminated, replace PU.

SYMPTOM

PU battery box front battery indicator has less than 3 or no LCD light illuminated.

      MALFUNCTION

AN/UYK-128(V) Computer fails to revert to backup battery power with loss of vehicle power.

      CORRECTIVE ACTION

NOTE

This procedure is for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.

      1.   With the AN/UYK-128(V) Computer operating, charge the battery for 8 hours.

         a.   Battery Box has at least 3 LCD bars illuminated -Problem resolved.

CORRECTIVE ACTION–Continued

   b.   If not, replace rechargeable batteries in Battery Box with recharged batteries. Battery Box LCD bars illuminate - Problem is resolved.

2.   If charging batteries does not solve problem, replace Battery Box in PU.

3.   If problem still not resolved, replace PU.

SYMPTOM

Battery tray diagnostic code fails to display (no illumination).

MALFUNCTION

AN/UYK-128(V) Computer fails to revert to backup battery power with loss of vehicle power.

CORRECTIVE ACTION

NOTE

This procedure is for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578.

1.   AN/UYK-128(V) Computer has to be powered up to check diagnostic codes. Press button twice on Battery Tray to display diagnostic codes. Diagnostic code 05 is displayed.

2.   With the AN/UYK-128(V) Computer operating, charge the battery for 8 hours.

   a.   Battery Tray does not display diagnostic code 05 -Problem resolved.

   b.   If diagnostic code 05 is still displayed, replace rechargeable battery in front of Battery Tray with recharged battery. Battery Tray Does not display diagnostic code 05. Problem is resolved.

   c.   If diagnostic code 05 is still displayed, replace Battery Tray in Processor Unit - Problem is resolved.

3.   If problem not resolved, replace Processor Unit.

SYMPTOM

No LCD displayed on Battery Tray when diagnostic button pressed.

MALFUNCTION

Battery tray.

CORRECTIVE ACTION

NOTE

This procedure is for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578.

NOTE

AN/UYK-128(V) Computer has to be powered up for the Battery Tray diagnostic button to work.

1.   Press diagnostic button at front of battery tray.

   a.   No LCD displayed, replace 9V non-rechargeable battery in Battery Tray - Problem resolved.

   b.   If not, replace Battery Tray.

SYMPTOM

AN/UYK-128(V) Computer locks-up or runs slow.

MALFUNCTION

AN/UYK-128(V) Computer locks-up or runs slow.

CORRECTIVE ACTION

NOTE

If a highlighted exclamation point (!) is displayed on the F5 status... button, this indicates the disk drive is at or near capacity. Also, if the system does not appear to be responding, it might be processing data. This could cause it to be slow to respond.

1. Try rebooting the AN/UYK-128(V) Computer. Rebooting solves the problem. If not, Clear Logs and Queues. Problem solved. If not continue.

2. Reconfigure platform Role/ID. This solves the problem. If not continue.

3. Reseat the RHDDC. Problem solved. If not, continue.

4. Make Master. Problem solved. If not then continue.

5. Replace RHDDC. Problem solved. If not continue.

6. Replace PU.

SYMPTOM

DU PWR amber LED is illuminated.

MALFUNCTION

PU power supply output voltage out of acceptable range.

CORRECTIVE ACTION

Replace PU

SYMPTOM

DU CPU red LED is illuminated or blinking.

MALFUNCTION

Input power out of tolerance range.

CORRECTIVE ACTION

1. Check that vehicle power is in range 18Vdc to 33Vdc. If out of range call for vehicle maintenance. If power checks OK, replace PU.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

DISPLAY UNIT TROUBLESHOOTING PROCEDURE

INITIAL SETUP:

TROUBLESHOOTING

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

NOTE

If the internal battery has been run-down, AN/UYK-128(V) Computer will not remain on when power is interrupted. When the external power problem has been resolved, AN/UYK-128(V) Computer must be operated for eight (or more) hours to recharge the internal battery.

NOTE

Use Multimeter AN/PSM-45A (or equivalent) to measure voltages. When troubleshooting AN/UYK-128(V) Computer, if a cable problem is suspected, refer to the cable data (WP , Cable-to-Platform Matrix) for the specific platform you are working on. The illustrations at the end of work package 0026, contain all the cable information required for troubleshooting. The quickest way to resolve a cable problem is replacement. If a replacement is not available, refer to the cable data (WP) to locate the wiring diagram, use the multimeter to check the cable for continuity, and verify there are no shorts between wires and/or shielding. Any opens or shorts will require cable replacement.

TROUBLESHOOTING PROCEDURE
DISPLAY UNIT TROUBLESHOOTING

SYMPTOM

DU **DISP** amber LED illuminated.

MALFUNCTION

Degraded display operation.

CORRECTIVE ACTION

NOTE

DU screen will go blank (screen saver) after 45 minutes of inactivity.

1. Verify that display is not in direct sunlight. Shutdown the system and let cool for 20 minutes. Restore power and reinitialize the cooled unit. If after 5 to 10 minutes of operation the **DISP** amber LED lights, replace the DU.

SYMPTOM

DU **DISP** red LED is illuminated.

MALFUNCTION

Display Unit shutdown or failure.

CORRECTIVE ACTION

1. Verify that display is not in direct sunlight. Shutdown the system and let cool for 20 minutes. Restore power and reinitialize the cooled unit. If the DU **DISP** red LED is illuminated - replace DU.

SYMPTOM

Display screen does not illuminate (blank screen).

MALFUNCTION

Display Unit shutdown or failure.

CORRECTIVE ACTION

1. Check **DISP** green LED light is illuminated. Press BLK OUT LAMP button to verify that it is not in blackout mode. Screen lights, problem solved. If not, continue.

2. Press DU **PWR** button and hold for 4 seconds. **DISP** green LED and screen should light.

    a. If LEDs do not light, press FCN and LED BRT+ together and hold for several seconds. If LEDs light, proceed to b. If not, troubleshoot for power.

    b. LED lights but screen doesn't, go to 3. Screen lights, problem solved.

3. Advance screen brightness level (BRT+) at least 4 times to make sure brightness is not turned down. Check brightness level each time it is advanced. If screen remains dark for PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 go to step 4. For PU NSN 7021-474-3793/NSN 7021-01-487-0578 proceed to step 5.

4. For PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 open PU access door, observe POST LED indicator.

    a. POST LED indicator is dark (not illuminated), replace PU.

    b. POST LED indicator illuminated green, replace DU.

CORRECTIVE ACTION–Continued

5. For Processor Unit NSN 70210474-3793/NSN 7021-01-487-0578 open PU access door, push button to view diagnostic messages.

    a. For dC message 02 replace PU.

    b. For dC message d1 or d2 replace DU.

SYMPTOM

Display screen is dim and hard to read.

MALFUNCTION

Display Unit malfunction.

CORRECTIVE ACTION

1. Check DU PWR LEDs.

    a. DU PWR LED is red check for loss of vehicle power.

    b. DU PWR LED is green, verify screen brightness is not turned down (press BRT + button on Display Unit control and indicator panel several times. Screen lights up, problem solved. If not, replace Display Unit.

SYMPTOM

Display screen is illuminated, nothing is displayed (white screen).

MALFUNCTION

Display Unit malfunction.

CORRECTIVE ACTION

1. Try restart/reboot.

2. Replace Display Unit.

3. Problem is solved.Problem not solved, replace cable W2.

SYMPTOM

DU screen is illuminated and data distorted or no data and streaks across screen.

MALFUNCTION

Display Unit malfunction.

CORRECTIVE ACTION

1. Try restart/reboot.

    a. Screen is clear, problem solved. If not, go to b.

    b. Replace PU, problem solved. If not, go to 2.

2.   Replace DU, problem solved. If not, replace cable W2.

SYMPTOM

DU touch screen does not respond to touch or responds improperly.

MALFUNCTION

Display Unit touchscreen malfunction.

CORRECTIVE ACTION

1. Perform TOUCHSCREEN CALIBRATION. Problem solved. If not, continue with 2.

2. Reboot AN/UYK-128(V) Computer and calibrate touchscreen. Problem solved. If not, continue with 3.

3. Replace DU. Problem solved. If not, continue with 4.

4. Replace RHDDC. Problem solved. If not, continue with 5.

5. Replace PU. Problem solved. If not, replace W2 cable.

SYMPTOM

CPU red LED is blinking.

MALFUNCTION

DU screen indicates stuck button.

CORRECTIVE ACTION

1. Push indicated stuck button on DU several times. Reboot the AN/UYK-128(V) Computer. Problem solved. If not, replace DU.

SYMPTOM

No response when DU button(s) are pressed.

MALFUNCTION

DU button(s) do not work.

CORRECTIVE ACTION

1. Check to ensure W2 cable is properly secured.

2. Reboot system. Problem solved. if not, replace DU.

SYMPTOM

DU LEDs PWR, DISP, or CPU fail to illuminate and DU screen is functioning properly.

MALFUNCTION

LEDs not illuminated.

CORRECTIVE ACTION

1. On DU control and indicator panel, press Lamp button and FCN button at same time to perform lamp test.

2. PWR, DISP, and CPU LEDs cycle red, amber, and green. If not, replace DU.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

KEYBOARD UNIT/MOUSE TROUBLESHOOTING PROCEDURE

INITIAL SETUP:

TROUBLESHOOTING

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

NOTE

If the internal battery has been run-down, AN/UYK-128(V) Computer will not remain on when power is interrupted. When the external power problem has been resolved, AN/UYK-128(V) Computer must be operated for eight (or more) hours to recharge the internal battery.

NOTE

Use Multimeter AN/PSM-45A (or equivalent) to measure voltages. When troubleshooting AN/UYK-128(V) Computer, if a cable problem is suspected, refer to the cable data (WP , Cable-to-Platform Matrix) for the specific platform you are working on. The illustrations at the end of work package 0026, contain all the cable information required for troubleshooting. The quickest way to resolve a cable problem is replacement. If a replacement is not available, refer to the cable data (WP) to locate the wiring diagram, use the multimeter to check the cable for continuity, and verify there are no shorts between wires and/or shielding. Any opens or shorts will require cable replacement.

TROUBLESHOOTING PROCEDURE

KEYBOARD UNIT/MOUSE TROUBLESHOOTING

SYMPTOM

Keyboard key(s)/mouse does not work.

MALFUNCTION

Keyboard Unit.

CORRECTIVE ACTION

1. Check to ensure KU cable to J2 on DU is properly connected. If not properly connected, shutdown power and reconnect KU cable. Power up AN/UYK-128(V) Computer. Problem solved. If not, continue.

2. Disconnect the KU cable from J2 of the DU.

3. Check for +5V between display J2 pin 1 (GND) and J2 pin 6 (+5V).

   a. If the +5V is missing or incorrect, replace the DU.

   b. If the +5V is correct, replace the KU.

SYMPTOM

Single or multiple keys do not operate. Also mouse and/or mouse switches do not operate.

MALFUNCTION

Keyboard Unit.

CORRECTIVE ACTION

1. Shut down AN/UYK-128(V) Computer and disconnect the Keyboard Unit cable from the DU.

2. Check the KU cable connector for dirty or bent pins. Clean connector pins if possible, or replace Keyboard.

3. Check the J2 female connector on the Display Unit for dirt/damage. If Display Unit J2 connector female pins are clogged or damaged, replace the Display Unit.

SYMPTOM

Keyboard back lighting does not light.

MALFUNCTION

Keyboard Unit.

CORRECTIVE ACTION

NOTE

The KU back lighting can only be seen in dimly lighted environment, not in normal light.

1. Verify that the Display Unit **BLK OUT** button has not been pressed. (Press it in an attempt to restore lighting.) If light can be restored by pressing the **BLK OUT** button, the keyboard is OK.

2. Press the key on the upper right row of keypad of the Keyboard Unit, cycling it through the 5 levels of brightness. If brightness not restored, replace Keyboard Unit.

SYMPTOM

CPU red LED is blinking. DU screen indicates stuck key.

MALFUNCTION

Keyboard Unit.

CORRECTIVE ACTION

1. Push indicated stuck key on KU several times. Reboot the AN/UYK-128(V) Computer. Problem solved. If not, replace KU.

END OF WORK PACKAGE

CHAPTER 3

UNIT MAINTENANCE

MAINTENANCE INSTRUCTIONS

FOR

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW (FBCB2)

CHAPTER 3

UNIT MAINTENANCE
MAINTENANCE INSTRUCTIONS

WORK PACKAGE INDEX

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

SERVICE UPON RECEIPT

INITIAL SETUP:

PRELIMINARY SERVICING OF EQUIPMENT

1. Check the packing list for correct part numbers and complete shipment or replacement parts when piece parts are involved. Inspect for the following:

    a.   Whenever possible, remove packing just prior to installation. Do not remove packing ahead of time.

    b.   Check cables and connectors for any obvious damage which may have occurred during shipping.

2. When the part received is a replacement, the failed part should be placed in the shipping container(s) left by the new part. Refer to WP 0001 00 for additional instructions.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

PMCS PROCEDURES INTRODUCTION

All the PMCS for this system is done at the operator level IAW the instructions in the FBCB2 Operator's Manual, TM 11-7010-326-10, or Pocket Guide, TB 11-7010-326-10. The maintainer has no periodic tasks to perform. Touchscreen Calibration should be performed only when required.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

PREVENTIVE MAINTENANCE CHECKS AND SERVICES

INITIAL SETUP:

Table 1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

ITEM NO.	INTERVAL	MAN-HOUR	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY AVAILABLE IF:
			Not applicable at Unit Level.		

MANDATORY REPLACEMENT PARTS

There are no mandatory replacement parts for the AN/UYK-128(V) Computer.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

MAINTENANCE PROCEDURES

INITIAL SETUP:

REMOVAL/REPLACEMENT INSTRUCTIONS

This section contains the Removeal/Replacement instructions for the computer assemblies and cables. Before a part or assembly is removed from a vehicle, fill out a "Maintenance Request" DA Form 2407. One copy of this completed form must remain with the vehicle and the remaining copies must be kept with the faulty component. To verify operation after final replacement, perform FUNCTIONAL CHECK.

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

CAUTION

Water may enter the Processor Unit. Before wash-down, ensure that the Removable Hard Disk Drive Cartridge access door is closed and all connectors are properly covered with cable connectors or caps. Failure to do so may result in equipment damage.

CAUTION

The above ESDS (Electrostatic Discharge Sensitive) symbol requires that parts shall be controlled according to the ESDS device handling procedures in DOD-STD-1686. Every Circuit Card Assembly (CCA) and every broken connection is subject to potential Electrostatic Discharge (ESD). Each LRU connector provides a path to sensitive circuitry, as does one end of a cable with the other end connected to an LRU. During Remove procedures, the ground strap must be the last cable disconnected. During Replace procedures, the ground strap must be the first cable connected.

CAUTION

Wait at least 10 seconds after Processor Unit is powered down, to allow the disks to stop spinning, before removing the RHDDC.

NOTE

Each time a connection is broken, both connectors (at the LRU and at the cable) are exposed to possible contamination. Do not allow cable connectors to fall into an unclean area (the ground or a dirty compartment). The LRU and cable connectors have protective caps. These connectors must be covered with the protective caps when not connected together. Do not allow fingers or chemicals to make contact with the connector pins. Do not allow moisture to contaminate connector pins.

NOTE

Contractors for the M101 (Abrams) and M202 (Bradley) are not updating their manuals for the LUT. They will provide a contractor formatted reference sheet instead.

NOTE

While replacing electrical tie down straps (tie-wraps), replace any tie-down mounting base (tie-wrap holder) that is damaged.

NOTE

Operator must remove locks from all the AN/UYK-128(V) Computer equipment before maintenance can be conducted.

REPAIR OR REPLACEMENT

REMOVE KEYBOARD UNIT (KU)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Keyboard Unit should be disconnected and properly stowed when not in use to prevent it from causing equipment damage.

1. Power down AN/UYK-128(V) Computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

2. Disconnect KU cable connector from display J2 connector if connected as shown in WP 0001 00 General Information. (See the two figures below for Keyboard Configurations).

3. Remove keyboard from KU stowage box (when necessary).

REPAIR OR REPLACEMENT–Continued

REPLACE KEYBOARD UNIT (KU)
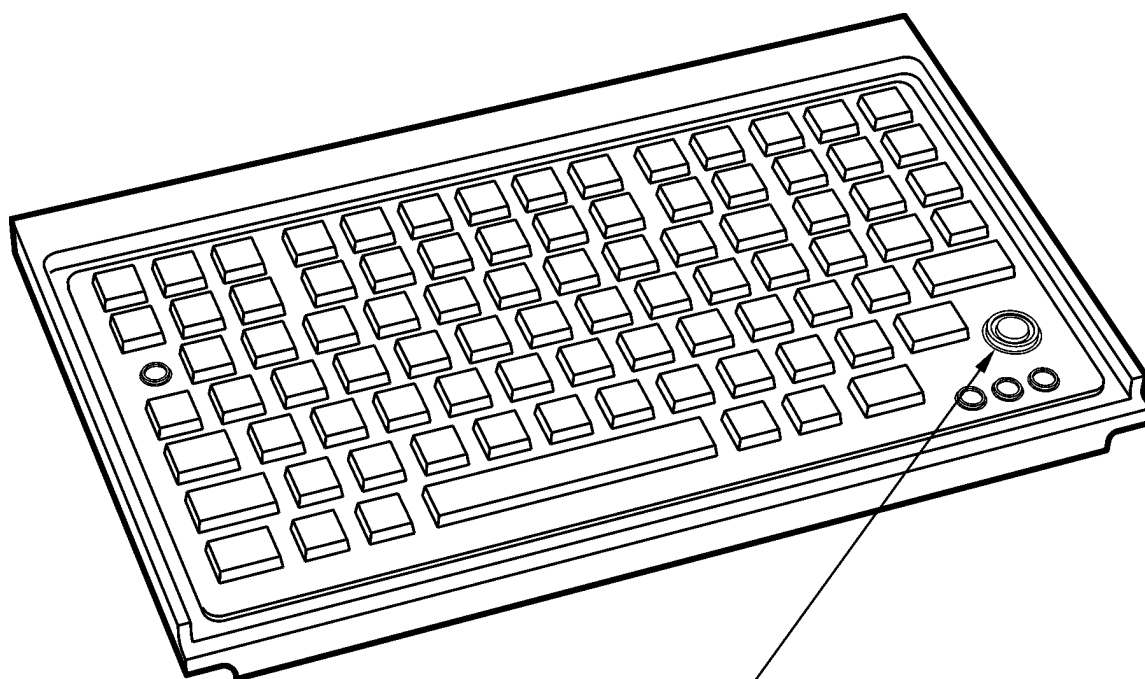
MOUSE POINTING DEVICE   APPHA_4120_01
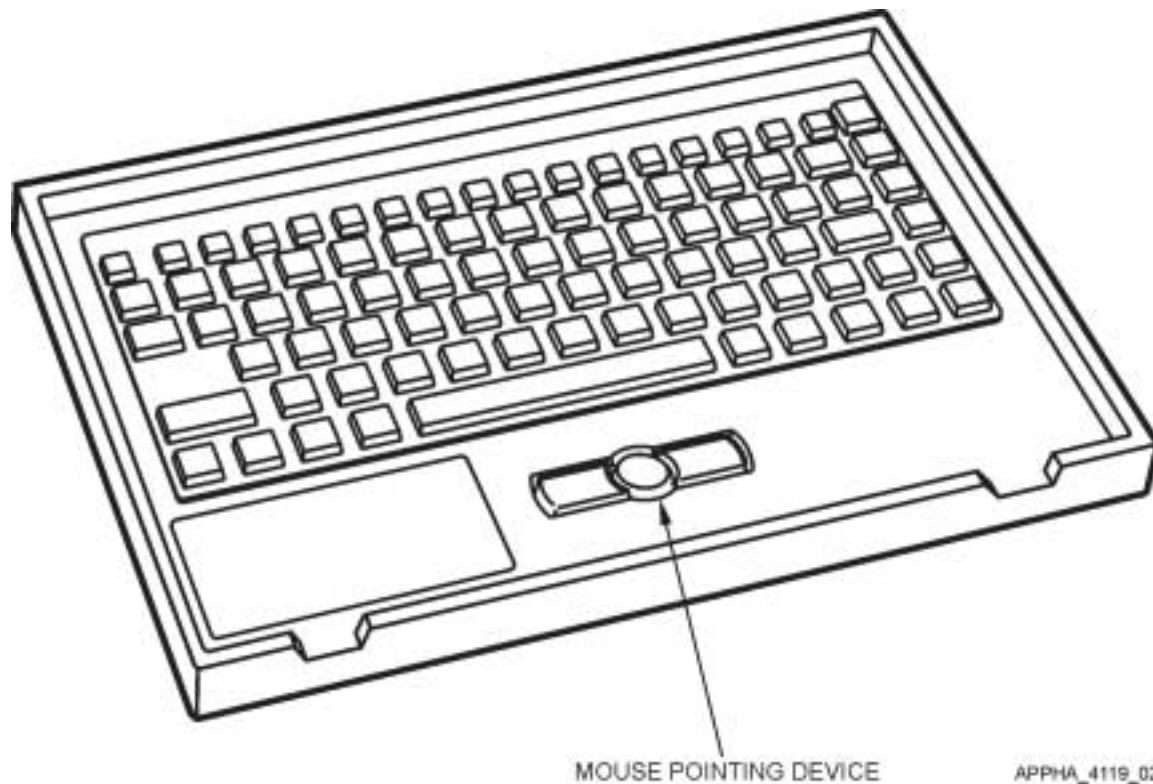
Figure 1 **Keyboard Unit (KU) NSN 7025–01–474–3792**

REPAIR OR REPLACEMENT–Continued

MOUSE POINTING DEVICE   APPHA_4119_02

Figure 2 **Keyboard Unit (KU) NSN 7025–01–474–3791**

1.   Connect keyboard unit KU cable connector to display J2 connector as shown in General Information, work package 0001.

2.   Perform Startup according to information provided in this work package.

3.   Select Free Text Message.

4.   Type all numbers, letters, and special characters to validate keyboard operation.

REMOVE DISPLAY UNIT

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

REPAIR OR REPLACEMENT–Continued

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

WARNING

Backlights in display may break and leak Mercury and Lead. If Mercury and Lead are exposed, avoid contact with skin, eyes, and clothes, and don't breathe vapors. Immediately contact the proper authorities so that spillage can be properly removed and if necessary, appropriate medical aid administered. Dispose of Mercury and Lead IAW your local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

The internal display inverters operate at high voltages. Electrical shock may occur and cause injury to personnel and/or death. Do not disassemble the display.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

CAUTION

Do not shut down the computer power without first following software shutdown procedures. Failure to comply may cause loss of data.
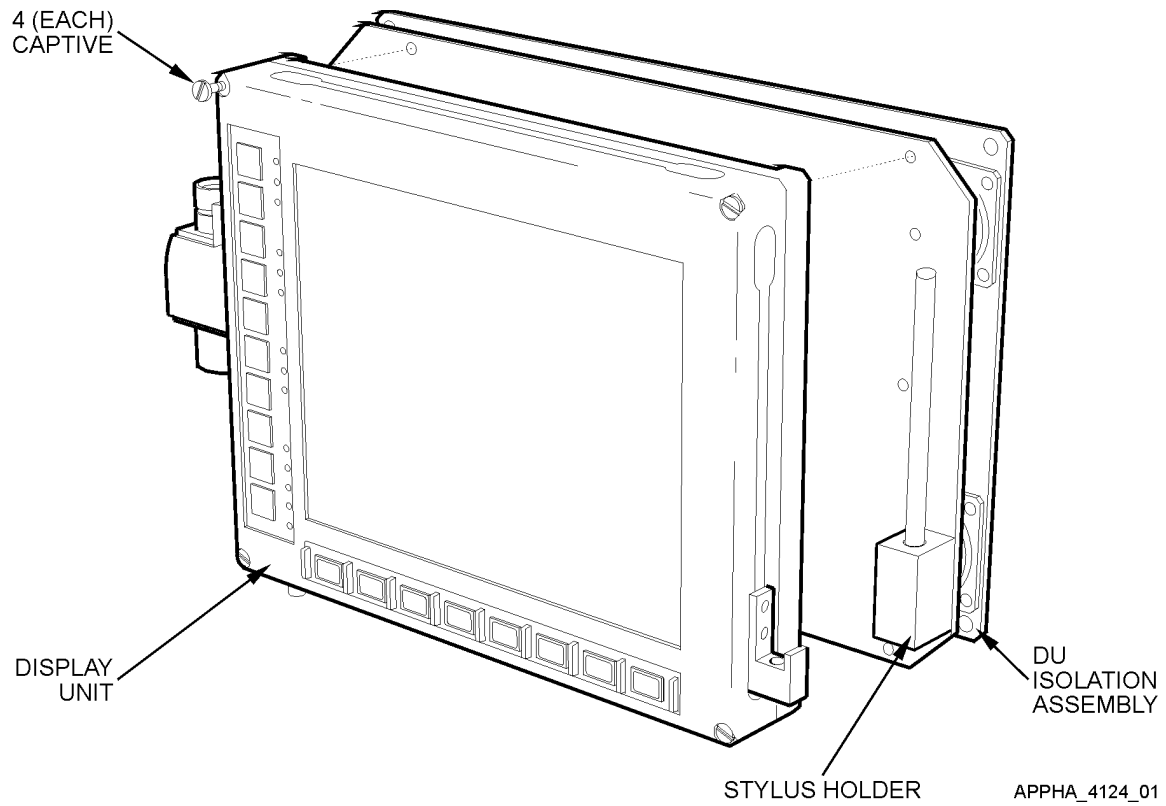
REPAIR OR REPLACEMENT–Continued

Figure 3 **Remove/Replace Display Unit NSN 7025–01–475–0229 (10.4") Or NSN 7025–01–475–0282 (10.4"/12.1")**

REPAIR OR REPLACEMENT–Continued

4 (EACH)
CAPTIVE

DISPLAY
UNIT

STYLUS HOLDER
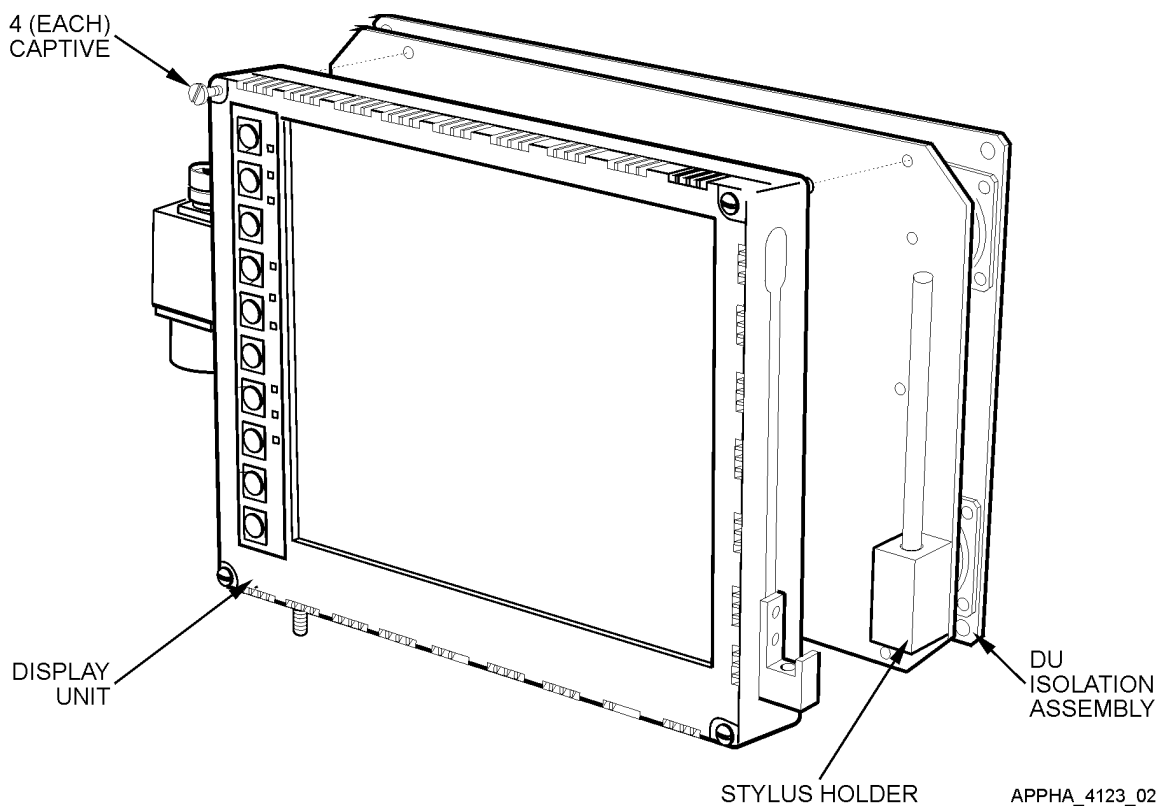
DU
ISOLATION
ASSEMBLY

APPHA_4123_02

Figure 4 **Remove/Replace Display Unit NSN 7025–01–475–0280 (12.1")**

1. Power down AN/UYK-128(V) Computer system IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

2. Disconnect W2-P2 display cable connector from display J1 connector.

3. Disconnect KU cable connector from display J2 keyboard connector (if connected).

4. Install protective cap on display J2 connector.

5. Remove wing nut and lock washer from E1ground stud.

6. Remove braided ground cable from E1 ground stud.

7. Install wing nut and lock washer onto E1 ground stud.

8. Remove tie-wraps securing W2 display cable or ground strap as required using diagonal wire cutters.

9. Loosen four (4) captive screws on DU using a $\frac{1}{4}$" flat-tip screwdriver.

10. Remove DU from display isolation assembly.

REPAIR OR REPLACEMENT–Continued
REPLACE DISPLAY UNIT (DU)

WARNING

Drivers viewing display unit while operating vehicle may result in personnel hazards/equipment damage. Drivers should not view display unit while vehicle is in motion, unless otherwise dictated by Standard Operating Procedures (SOP) unique to that platform.

WARNING

Personnel Hazard
FBCB2 display may obstruct Driver's Field of View. To maximize driver field of view:

1. Slide FBCB2 display up using four wing-nuts at rear of display.
2. Minimize display profile by aligning side of display with A-Pillar between passenger window and windshield.

WARNING

Personnel Hazard
Vehicle specific for HMMWV Ambulance:
Display may obstruct view of windshield and right side window. Maximize driver field-of-view prior to vehicle operation.

WARNING

Vehicle specific for HEMTT/PLS:
Display may obstruct view of windshield and right side window. Maximize driver field-of-view prior to vehicle operation.

1. Align the four (4) DU captive screws with threaded inserts in display isolation assembly top plate.

2. Tighten four (4) captive screws using a $\frac{1}{4}$" flat-tip screwdriver.

3. Remove wing nut and lock washer from E1 ground stud.

4. Install braided ground cable strap to on E1 ground stud.

5. Install wing nut and lock washer to on E1 ground stud.

6. Remove protective cap from display J1 connector.

7. Connect W2-P2 display cable connector to display J1 connector.

8. Connect KU cable connector to display J2 connector.

REPAIR OR REPLACEMENT–Continued

9. Perform AN/UYK-128(V) Computer system startup and login procedures.

10. Perform TOUCHSCREEN CALIBRATION only if a new display unit is being installed.

NOTE

Touch screen calibration also serves as DU functional check.

11. Perform FUNCTIONAL CHECK.

REPAIR OR REPLACEMENT–Continued
REMOVE PROCESSOR UNIT (PU)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

CAUTION

Do not connect or disconnect the PLGR interface cable without first powering down the AN/UYK-128(V) Computer and PLGR. Failure to comply will result in equipment damage.

CAUTION

Do not shut down the computer power without first following software shutdown procedures. Failure to comply may cause loss of data.

CAUTION

Wait at least 10 seconds after Processor Unit (PU) is powered down, to allow the disks to stop spinning, before removing the Removable Hard Disk Drive Cartridge (RHDDC). Failure to comply could result in equipment damage.

1. Power down AN/UYK-128(V) Computer system IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

NOTE

The PU may have a thermal guard and/or locking bracket which must first be removed, then later reinstalled when PU is replaced. If the PU does not require replacement, the thermal guard and locking bracket may remain in place.

2. Disconnect W1-P2 power cable connector from PU J1 PWR connector.

3. Disconnect W4-P1 audio cable connector from PU J2 connector (for vehicles is equipped with intercom systems).

4. Disconnect W3-P1 SIAD cable connector from PU J3 connector.

5. Disconnect W2-P1 display cable connector from PU J4 connector.

REPAIR OR REPLACEMENT–Continued

6.   Disconnect W5 Universal Serial Bus (USB) connector from PU J5 connector (if PUit is used in this configuration).

7.   Remove wing nut and lock-washer from E1 ground stud.

8.   Remove braided ground cable strap from E1 ground stud.

9.   Install wing nut and lock-washer to E1 ground stud.

10.   Loosen two (2) self-locking front retainers on PU until sleeve clears front hook.

11.   Slide PU on guides until left and right mounting brackets clear the rear retainers. (PU is removed).

12.   Remove PU.

13.   Install protective caps on PU cable connectors.

NOTE

If PU is being removed to facilitate other maintenance, do not remove the RHDDC, locking bracket, thermal guard, and/or top-mounted keyboard stowage box if so equipped. If PU is being replaced, the RHDDC, locking bracket, thermal guard, and/or top-mounted keyboard stowage box (as equipped) must be removed from the faulty unit and transferred to the replacement PU. Perform the steps below as required.

14.   Remove two (2) flat head screws from PU locking bracket (if it is installed) using a No. 2 cross-tip screwdriver.

15.   Remove locking bracket from PU.

16.   Loosen captive fasteners and open PU RHDDC access door.

17.   Remove RHDDC from PU.REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC).

18.   Shut and secure RHDDC access door.

NOTE

Steps 19 and 20 below, are for the PU's with the thermal Guard.

19.   Loosen four (4) captive screws in PU thermal guard (see) using a No. 2 cross-tip screwdriver.

20.   Remove thermal guard from PU.

REPAIR OR REPLACEMENT–Continued
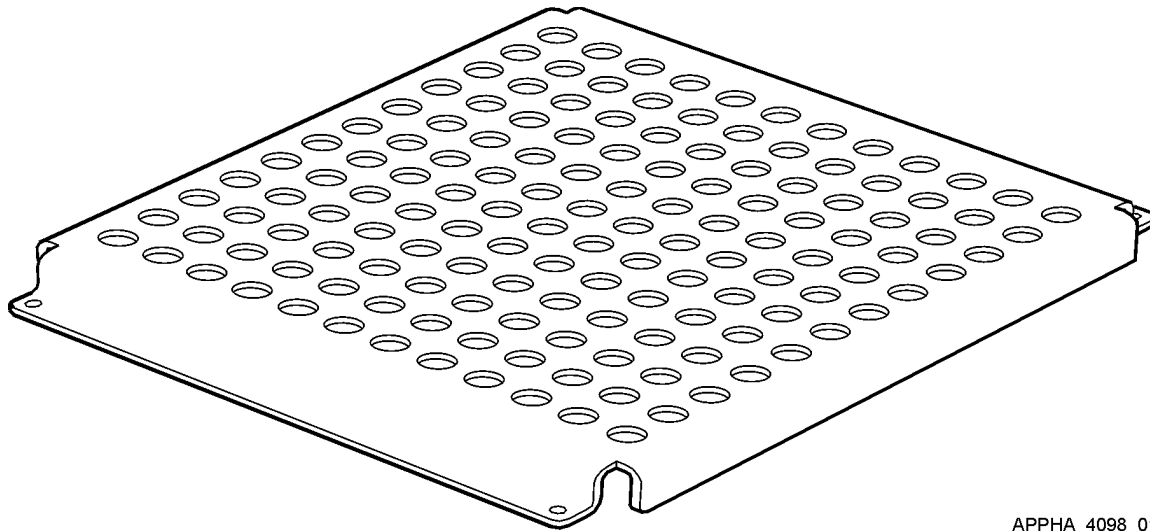
APPHA_4098_01

Figure 5 **Thermal Guard**

NOTE

Steps 21 and 22 are for the Platforms where the keyboard stowage box P/N 872845-1 is mounted on top of the PU.

21. Loosen four (4) captive screws in top-mounted keyboard stowage box using a No. 2 cross-tip screwdriver.

22. Remove keyboard stowage box from the PU.

NOTE

Steps 23 and 24 are for Platforms M1031 CUCV Shop Van and M998/M1026/M1038/HMMWV I-Rack that have Connector Guards.

23. Loosen the two screws securing the Connector Guard to the PU.

24. Remove the Connector Guards.
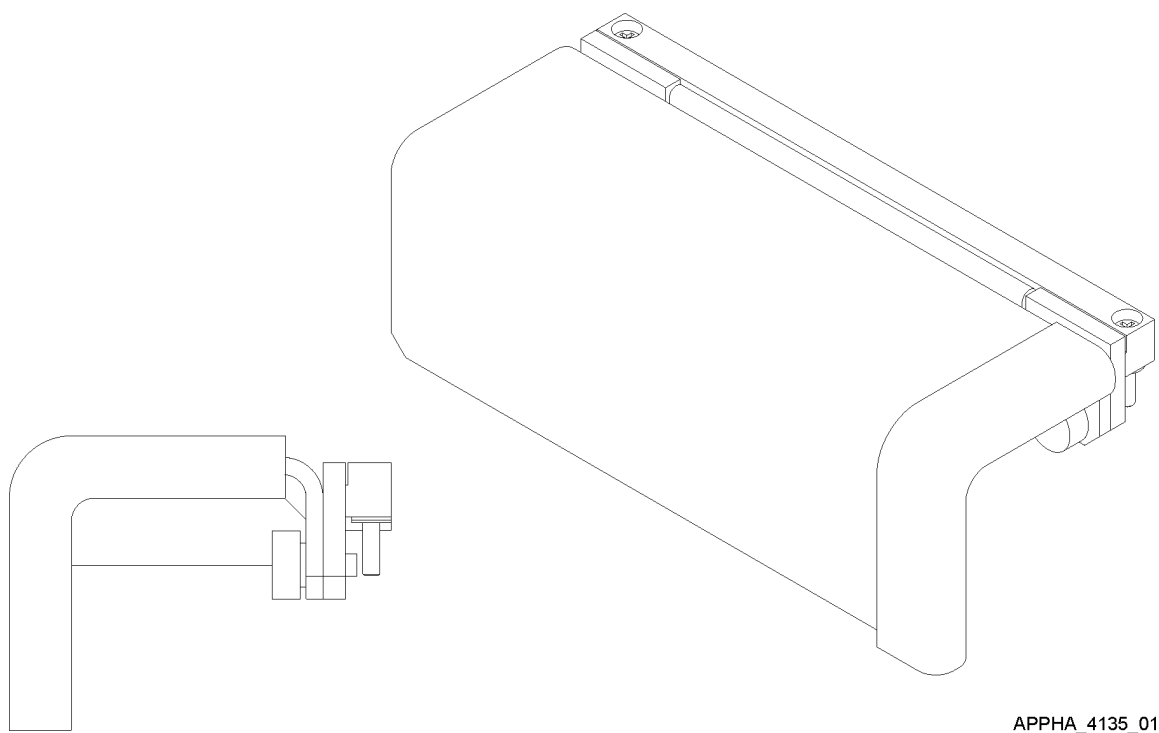
REPAIR OR REPLACEMENT–Continued

APPHA_4135_01

Figure 6   **Connector Guard For The Hmmwv Platform**

.09

2.33

135.00°

4.63

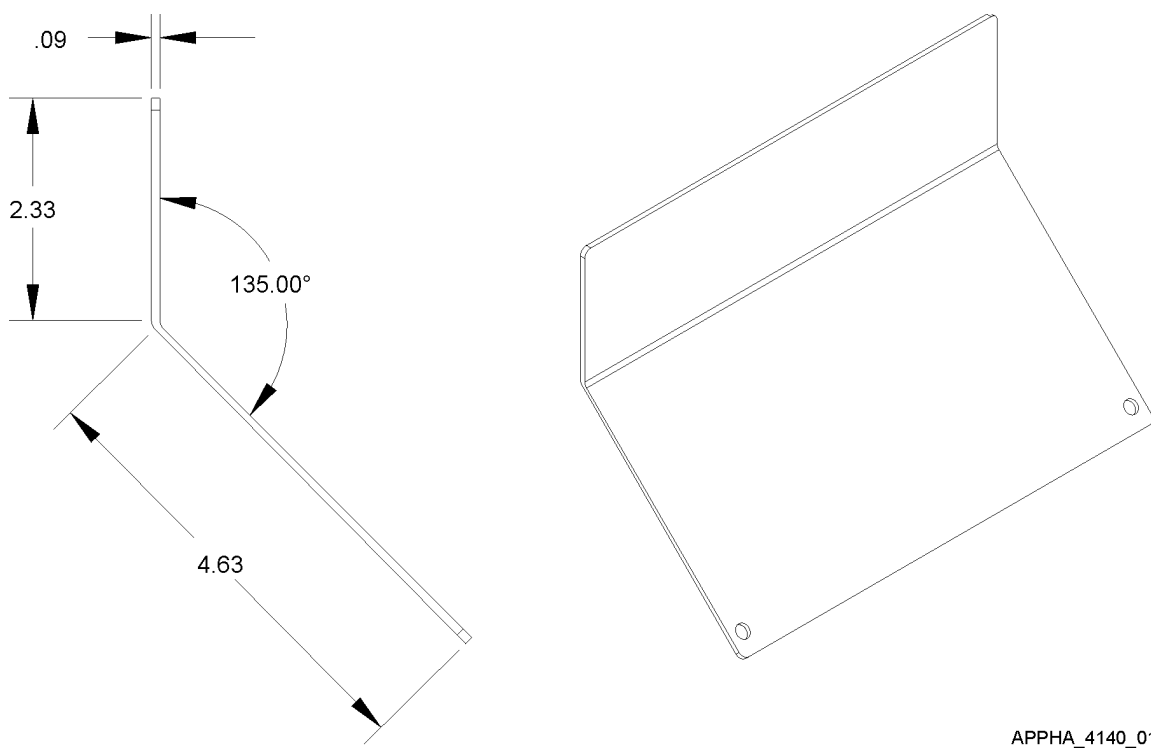APPHA_4140_01

Figure 7   **Connector For The M1031 Cucv Platform**

REPAIR OR REPLACEMENT–Continued
REPLACE PROCESSOR UNIT (PU)

CAUTION

Not all RHDDC models are interchangeable. Refer to National Stock Numbers (NSN) and relevant technical manuals to determine compatibility with the Processor Unit (PU). Failure to comply with this caution could result in system damage.

NOTE

If PU was removed to facilitate other maintenance, do not remove the RHDDC, locking bracket, thermal guard, and/or top-mounted keyboard stowage box if so equipped. If PU was replaced, the RHDDC, locking bracket, thermal guard, and/or top-mounted keyboard stowage box (as equipped) from the faulty unit must be reinstalled on the replacement PU. Perform the steps below as required.

1. Loosen captive fasteners and open the RHDDC access door. Install the original RHDDC into replacement PU.

2. Align holes in locking bracket with tapped holes in PU.

3. Install two (2) flat head screws using a No.2 cross-tip screwdriver and secure locking bracket to PU.

NOTE

Steps 4 and 5, below, are for the PU's requiring the thermal Guard. The Platforms are M113 APC Common, M1031 CUCV, M93 Fox, M9 ACE, M998/M1026/M1038 HMMWV, and the M923 5-Ton.

4. Align four (4) thermal guard captive screws with holes in top of PU.

5. Tighten four (4) captive screws in thermal guard using a No. 2 cross-tip screwdriver.

NOTE

Steps 6 and 7 are for the PU's that have a top-mounted keyboard stowage box.

6. Align four (4) keyboard stowage box captive screws with holes in top of PU.

7. Tighten four (4) captive screws in keyboard stowage box using a No. 2 cross-tip screwdriver.

8. Align left and right mounting brackets on PU with guides.

9. Install Slide PU on guides until mounting brackets seat in rear retainers (see figure below).

10. Slide self-locking front retainer sleeves over front hooks.

11. Tighten self-locking front retainers until hand- tight.

12. Remove wing nut and lock washer from E1 ground stud.

13. Install braided ground cable strap to E1 ground stud.

14. Install wing nut and lock washer to E1 ground stud.

15. Remove protective caps from PU cable connectors.

16. Connect W2-P1 display cable connector to PU J4 connector.

17. Connect W3-P1 SIAD cable connector to PU J3 connector.

18. Connect W4-P1 audio cable connector to PU J2 connector if vehicle is equipped with intercom system.

19. Connect W1-P2 power cable connector to PU J1 connector.

20. Connect W5 Universal Serial Bus (USB) cable connector to PU J5 connector if PU is used in Tactical Operation Center (TOC) configuration.

REPAIR OR REPLACEMENT–Continued

21. Install lock on PU, if required.

22. Perform AN/UYK-128(V) Computer system startup and login procedures IAW Chapter 2, Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

NOTE

Touch screen calibration also serves as PU functional check.

23. Perform TOUCHSCREEN CALIBRATION if a new processor unit has been installed.
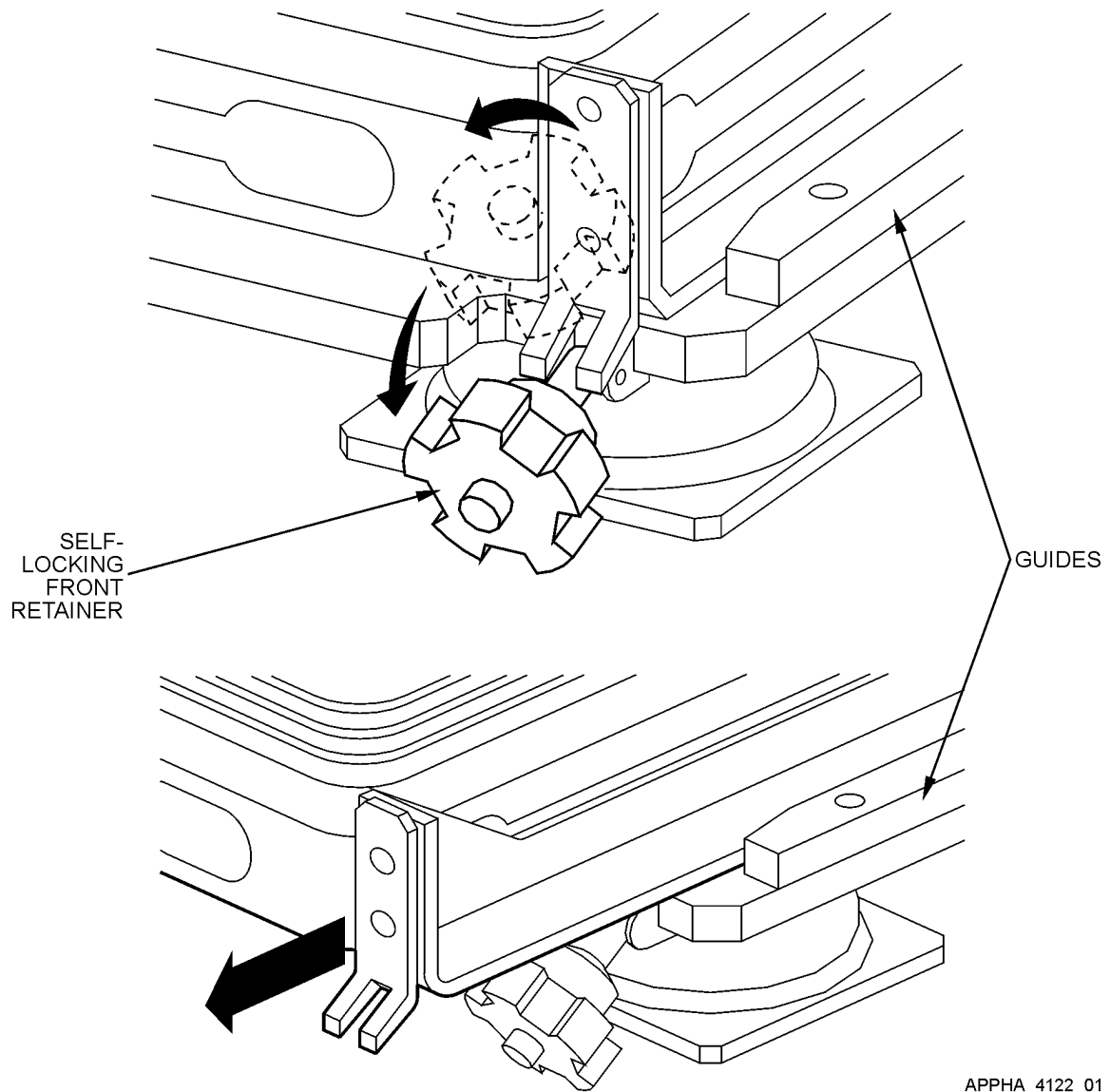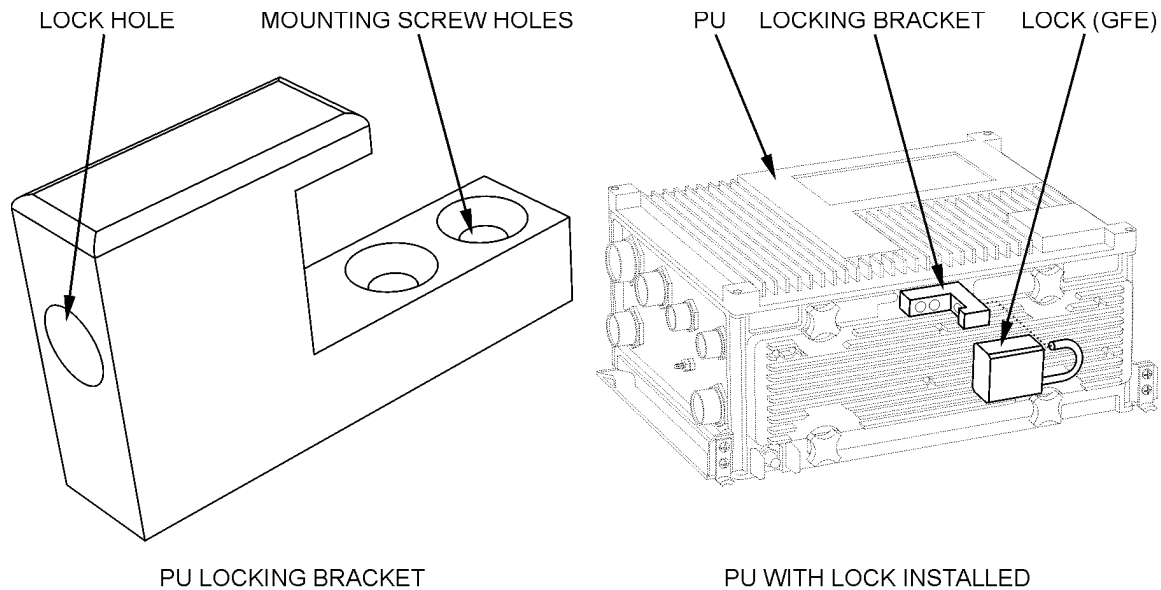
24. Perform FUNCTIONAL CHECK.

SELF-
LOCKING
FRONT
RETAINER

GUIDES

APPHA_4122_01

Figure 8   **PU Self-Locking Front Retainer**

REPAIR OR REPLACEMENT–Continued

LOCK HOLE   MOUNTING SCREW HOLES   PU   LOCKING BRACKET   LOCK (GFE)

PU LOCKING BRACKET   PU WITH LOCK INSTALLED

APPHA_4191_01

Figure 9   **Remove/Replace Processor Unit (PU) Locking Components Remove/Replace**

REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause personnel injury or equipment damage.

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Do not shutdown the computer power without first following software shutdown procedures. Failure to comply may cause loss of data.

REPAIR OR REPLACEMENT–Continued

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant Technical Manuals (TMs) to determine compatibility with the Processor Unit (PU). Failure to comply could result in equipment damage.

CAUTION

Keep the Removable Hard Disk Drive Cartridge (RHDDC) away from strong magnetic fields and never bang or drop RHDDC on any surface. Failure to comply could result in damage to stored data or equipment damage.

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit (PU) is powered up. Failure to comply could result in equipment damage.

CAUTION

Ensure access door is free of obstructions and door screws are properly thightened. Failure to comply can cause equipment damage.

1. Power down AN/UYK-128(V) Computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.Power down computer per instructions in the Operators Manual , TM 11-7010-326-10 or Pocket Guide, TB 11-7010-326-10).

2. Open PU guard/kick plate (M548A3 VOLCANO only).

3. Remove chain from the guard (HMMWV only) if not already accomplished.

4. Remove lock from PU if not already accomplished.

5. Loosen six (6) captive fasteners on theon RHDDC access door.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

6. Open RHDDC access door completely.

NOTE

The RHDDC in PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 is located on the interior left side. If the RHDDC is located on the right side of the PU, refer to REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) .

7. Pull the two (2) RHDDC retaining latches outward to release the cartridge.

8. Grasp pull RHDDC wire or handle with fingers and pull straight outward with steady pressure until RHDDC cartridge unseats and clears PU access door. (If necessary, slightly rock cartridge back and forth to unseat it.)

9. Place RHDDC in protective carrying case.

REPAIR OR REPLACEMENT–Continued

10. Secure RHDDC for movement IAW local unit operating procedure.

NOTE

The Removable Hard Disk Drive Cartridge (RHDDC) may contain classified information. Follow applicable security operating procedure when securing and transporting any RHDDC.

NOTE

If replacing the RHDDC immediately,skip remaining steps and go directly to next section for cartridge replacement actions.

NOTE

Ensure both retaining latches for the Removable Hard Disk Drive Cartridge (RHDDC) are fully retracted (i.e., folded back completely). Failure to comply may result in equipment damage when closing and securing the access door.

11. Push the two (2) RHDDC retaining latches back over the empty cartridge slot.

12. Ensure thumb screw that holds battery pack in place is securely tightened.

13. Ensure no obstruction, such as wire handle or retaining latch, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

14. Carefully align, close access door and hold it shut.

NOTE

Loosely thread all six (6) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

15. Loosely thread six (6) captive fasteners on access door.

16. Tighten six (6) captive fasteners evenly and securely on access door.

17. Install lock on PU if required.

18. Install chain on the guard (HMMWV only) if required.

19. Close PU guard/kick plate (M548A3 VOLCANO only).

REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

REPAIR OR REPLACEMENT–Continued

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant Technical Manuals (TMs) to determine compatibility with the Processor Unit (PU). Failure to comply could result in equipment damage.

CAUTION

Keep the Removable Hard Disk Drive Cartridge (RHDDC) away from strong magnetic fields and never bang or drop RHDDC on any surface. Failure to comply could result in damage to stored data or equipment damage.

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit (PU) is powered up. Failure to comply could result in equipment damage.

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.
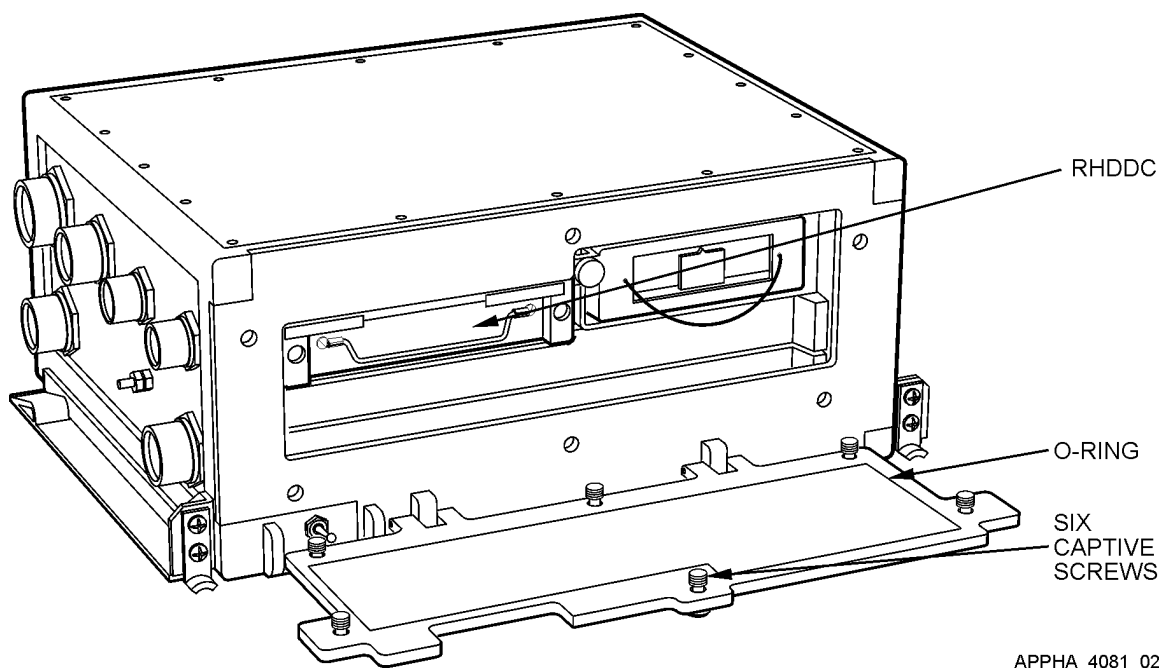

Figure 10 **Remove/Replace RHDDC NSN 7025–01–474–5733 & Remove/Replace For PU NSN 7021–01–475–0217**

REPAIR OR REPLACEMENT–Continued

NOTE

Ensure both retaining latches for the Removable Hard Disk Drive Cartridge (RHDDC) are fully retracted (i.e., folded back completely). Failure to comply may result in equipment damage when closing and securing the access door.

1. Power down AN/UYK-128(V) Computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

2. Open PU guard/kick plate (M548A3 VOLCANO only).

3. Remove chain from the guard (HMMWV only) if not already accomplished.

4. Remove lock from PU if not already accomplished.

5. Loosen six (6) captive fasteners on RHDDC access door.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

6. Open RHDDC access door completely.

7. Pull the two (2) RHDDC retaining latches outward from the empty cartridge slot.

8. Remove RHDDC from protective carrying case.

9. Grasp RHDDC wire handle with label facing upward toward top of PU.

NOTE

The RHDDC in PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 is located on the interior left side. If the RHDDC is located on the right side of the PU, refer to REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) for the proper procedure.

10. Insert cartridge into the left slot and carefully slide into place while applying steady pressure until fully seated. (If necessary, slightly rock cartridge back and forth to seat it.)

11. Push the two (2) retaining latches inward over the RHDDC to lock it into place.

12. Ensure thumb screw that holds battery pack in place is securely tightened.

13. Ensure no obstruction, such as wire handle or a retaining latch, prevents proper seating of gasket or closure of access door.

14. Carefully align and close access door and hold it shut.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

15. Loosely thread all six (6) captive fasteners before any one fastner is completely tightened, or remaining fastners may be difficult to thread.

16. Tighten six (6) captive fasteners evenly and securely on access door.

17. Perform AN/UYK-128(V) Computer system startup and login procedures IAW Chapter 2, Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

REPAIR OR REPLACEMENT–Continued

18. Perform TOUCHSCREEN CALIBRATION of this manual if a new RHDDC has been installed in the processor unit.

NOTE

Touch Screen Calibration also serves as functional check of Removable Hard Disk Drive Cartridge (RHDDC).

19. Install lock on PU if required.

20. Install chain on the guard (HMMWV only) if required.

21. Close PU guard/kick plate (M548A3 VOLCANO only).

NOTE

If AN/UYK-128(V) Computer Removable Hard Disk Drive Cartridge (RHDDC) has been replaced, platform Role/ID may be incorrect and must be reconfigured. Otherwise incoming Command and Control (C2) messages will not be able to be received. In addition, incorrectly relayed information due to wrong platform Role/ID on the vehicle's computer may adversely impact message flow between different echelons.

22. Perform the Configure Platform/ Role - provided in current work package.

REPAIR OR REPLACEMENT–Continued

REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant Technical Manuals (TMs) to determine compatibility with the Processor Unit (PU). Failure to comply could result in equipment damage.

CAUTION

Wait at least 10 seconds after Processor Unit (PU) is powered down to allow disk to stop spinning before removing the Removable Hard Disk Drive Cartridge (RHDDC). Failure to comply could result in equipment damage.

CAUTION

Keep the Removable Hard Disk Drive Cartridge (RHDDC) away from strong magnetic fields and never bang or drop RHDDC on any surface. Failure to comply could result in damage to stored data or equipment damage.

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit (PU) is powered up. Failure to comply could result in equipment damage.

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

1. Power down AN/UYK-128(V) Computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

2. Open PU guard/kick plate (M548A3 VOLCANO only).

3. Remove chain from the guard (HMMWV only) if not already accomplished.

REPAIR OR REPLACEMENT–Continued

4. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

5. Loosen four (4) captive fasteners on RHDDC access door.

6. Open RHDDC access door completely.

NOTE

The RHDDC in PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 is located on the interior right side. If the RHDDC is located on the left side of the PU, refer to REMOVE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) for the proper procedure.

7. Pull RHDDC latching handle down to release cartridge.

8. Grasp RHDDC latching handle with fingers and pull straight outward with steady pressure until cartridge unseats and clears access door. (If necessary, slightly rock cartridge back and forth to unseat it.)

9. Place RHDDC in protective carrying case.

NOTE

The Removable Hard Disk Drive Cartridge (RHDDC) may contain classified information. Follow applicable security operating procedure when securing and transporting any RHDDC.

10. Secure RHDDC for movement IAW local unit operating procedure.

NOTE

If replacing RHDDC immediately, skip remaining steps in this paragraph and proceed to Replace Removable Hard Disk Drive Cartridge for cartridge replacement actions.

11. Ensure no obstruction, such as latching handle, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

12. Carefully align and close access door and hold it shut

NOTE

Loosely thread all four (4) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

13. Loosely thread four (4) captive fasteners on access door.

14. Tighten four (4) captive fasteners evenly and securely on access door.

15. Install lock on PU if required.

16. Install chain on the guard (HMMWV only) if required.

REPAIR OR REPLACEMENT–Continued

17. Close PU guard/kick plate (M548A3 VOLCANO only).

REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC)

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Not all Removable Hard Disk Drive Cartridge (RHDDC) models are interchangeable. Refer to National Stock Numbers (NSNs) and relevant Technical Manuals (TMs) to determine compatibility with the Processor Unit (PU). Failure to comply could result in equipment damage.

CAUTION

Keep the Removable Hard Disk Drive Cartridge (RHDDC) away from strong magnetic fields and never bang or drop RHDDC on any surface. Failure to comply could result in damage to stored data or equipment damage.

CAUTION

Never insert or remove the Removable Hard Disk Drive Cartridge (RHDDC) while the Processor Unit (PU) is powered up. Failure to comply could result in equipment damage.

CAUTION

Ensure Removable Hard Disk Drive Cartridge (RHDDC) access door is properly closed. The RHDDC access door must be free of obstructions, correctly sealed, and have all captive fasteners securely tightened. Failure to comply may result in equipment damage.
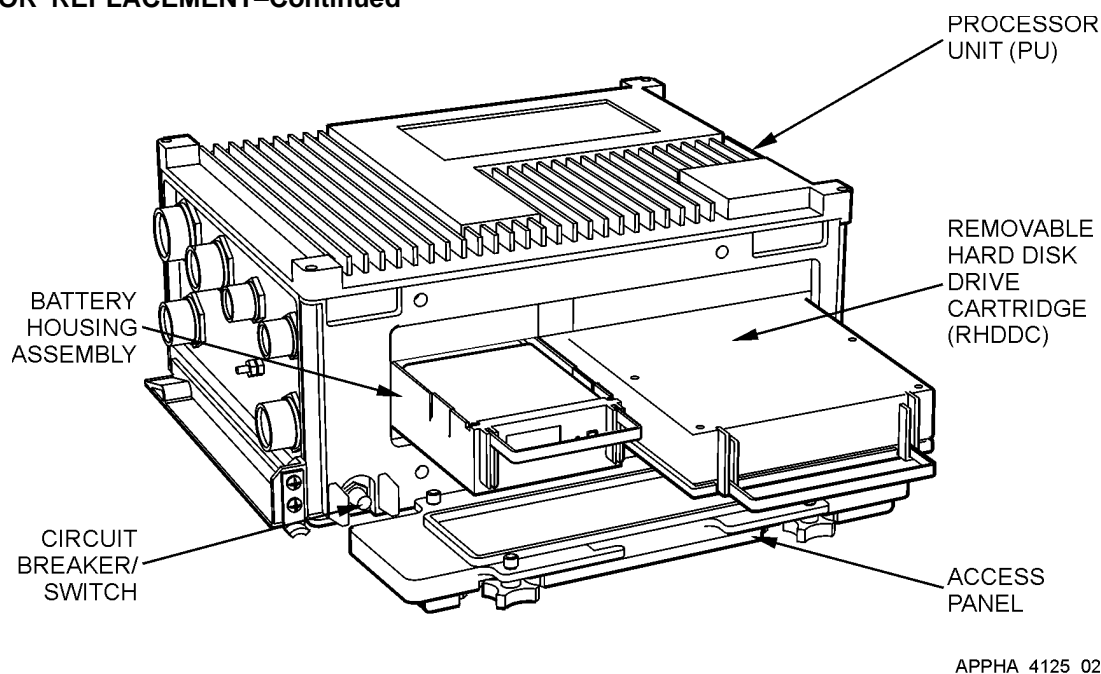
REPAIR OR REPLACEMENT–Continued

APPHA_4125_02

Figure 11 **Remove/Replace RHDDC NSN 7025–01–474–3793**

1. Power down AN/UYK-128(V) Computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

2. Open PU guard/kick plate (M548A3 VOLCANO only).

3. Remove chain from the guard (HMMWV only) if not already accomplished.

4. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

5. Loosen four (4) captive fasteners on RHDDC access door.

6. Open RHDDC access door completely.

NOTE

The RHDDC in PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 is located on the interior right side. If the RHDDC is located on the left side of the PU, refer to REPLACE REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) for the proper procedure.

7. Remove RHDDC from protective carrying case.

8. Pull down RHDDC latching handle and grasp with label facing upward toward top of PU.

9. Insert cartridge into the right slot and carefully slide into place while applying steady pressure until fully seated. (If necessary, slightly rock cartridge back and forth to seat it.)

10. Rotate RHDDC latching handle up to lock cartridge in place.

REPAIR OR REPLACEMENT–Continued

11. Ensure no obstruction, such as latching handle, prevents proper seating of gasket or closure of access door.

NOTE

> The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

12. Carefully align and close access door and hold it shut

NOTE

> Loosely thread all four (4) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

13. Loosely thread four (4) captive fasteners on access door.

14. Tighten four (4) captive fasteners evenly and securely on access door.

15. Perform AN/UYK-128(V) Computer system startup and login procedures IAW Chapter 2, Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

NOTE

> Touch Screen Calibration also serves as functional check of Removable Hard Disk Drive Cartridge (RHDDC).

16. Perform TOUCHSCREEN CALIBRATION if a new RHDDC has been installed in the processor unit.

17. Install lock on PU if required.

18. Install chain on the guard (HMMWV only) if required.

19. Close PU guard/kick plate (M548A3 VOLCANO only).

NOTE

> If AN/UYK-128(V) Computer Removable Hard Disk Drive Cartridge (RHDDC) has been replaced, platform Role/ID may be incorrect and must be reconfigured. Otherwise incoming Command and Control (C2) messages will not be able to be received. In addition, incorrectly relayed information due to wrong platform Role/ID on the vehicle's computer may adversely impact message flow between different echelons.

20. Perform Configure Platform/Role as provided in this work package.

REMOVE/REPLACE BATTERY CARRIER ASSEMBLY FOR PU NSN 7021–01–475–0217/NSN 7021–01–487–0579

WARNING

> Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause personnel injury or equipment damage.

REPAIR OR REPLACEMENT–Continued

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system including the PLGR is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

WARNING

NiMH internal hold-up batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

If Processor Unit batteries leak, remove batteries and clean out the battery compartment with a clean water-dampened cloth, then dry thoroughly. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

CAUTION

Keep batteries away from extreme temperatures. The battery pack will not function as an Uninterruptible Power Supply (UPS) when the temperature of the batteries is outside of the -20 degrees C to +55 degrees C range.

CAUTION

Ensure screw, lock washer, and flat washer have been removed from rear of battery box before removing battery carrier cover. Failure to remove screw could cause damage to printed wiring assembly on battery carrier.

NOTE

Refer to TM 11-6130-489-13&P for procedures to charge the BB-388/U rechargeable battery NSN 5820-01-215-6181.
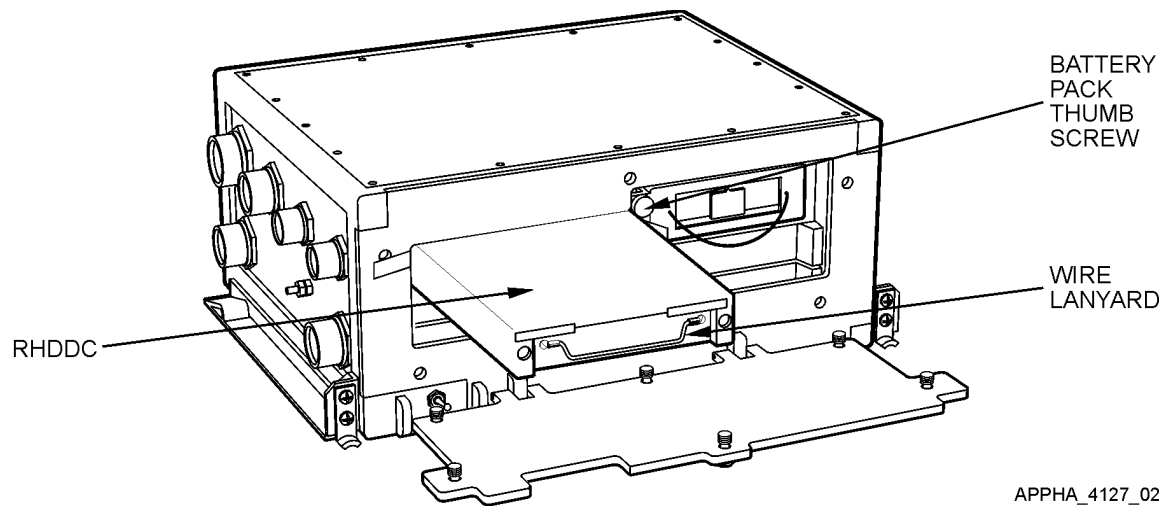
REPAIR OR REPLACEMENT–Continued

Figure 12 **Remove/Replace Battery Carrier Assembly P/N 59727–1 For PU NSN 7021–01–475–0217/NSN 7021–01–487–0579**

REPAIR OR REPLACEMENT–Continued

BATTERY
COVER

5 EACH
(CAPTIVE)

PRINTED
WIRE
ASSEMBLY

1 SCREW   1 LOCK WASHER   1 FLAT WASHER
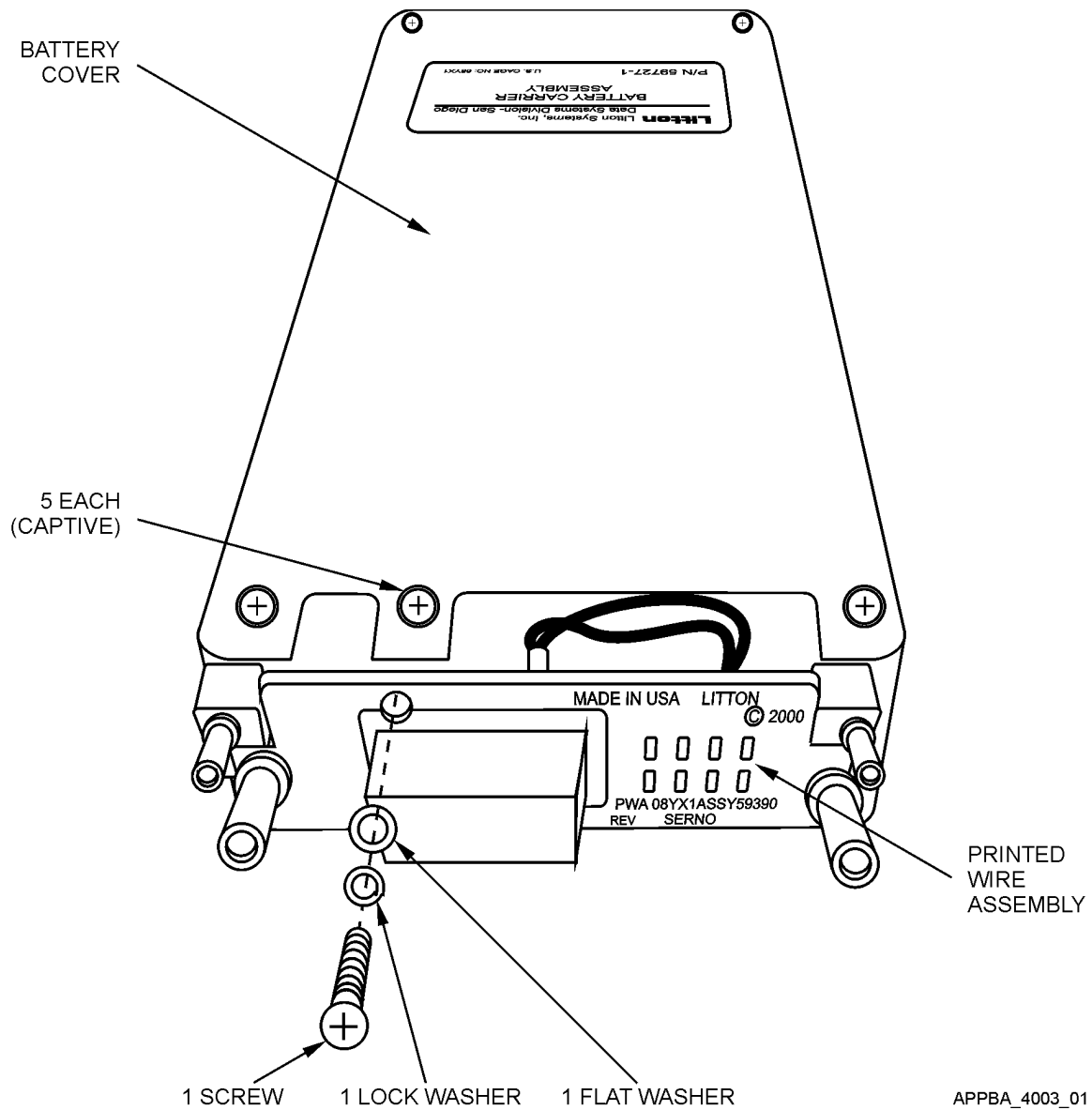
APPBA_4003_01

Figure 13   **Remove And Install Battery Carrier Assembly Covers**

REPAIR OR REPLACEMENT–Continued
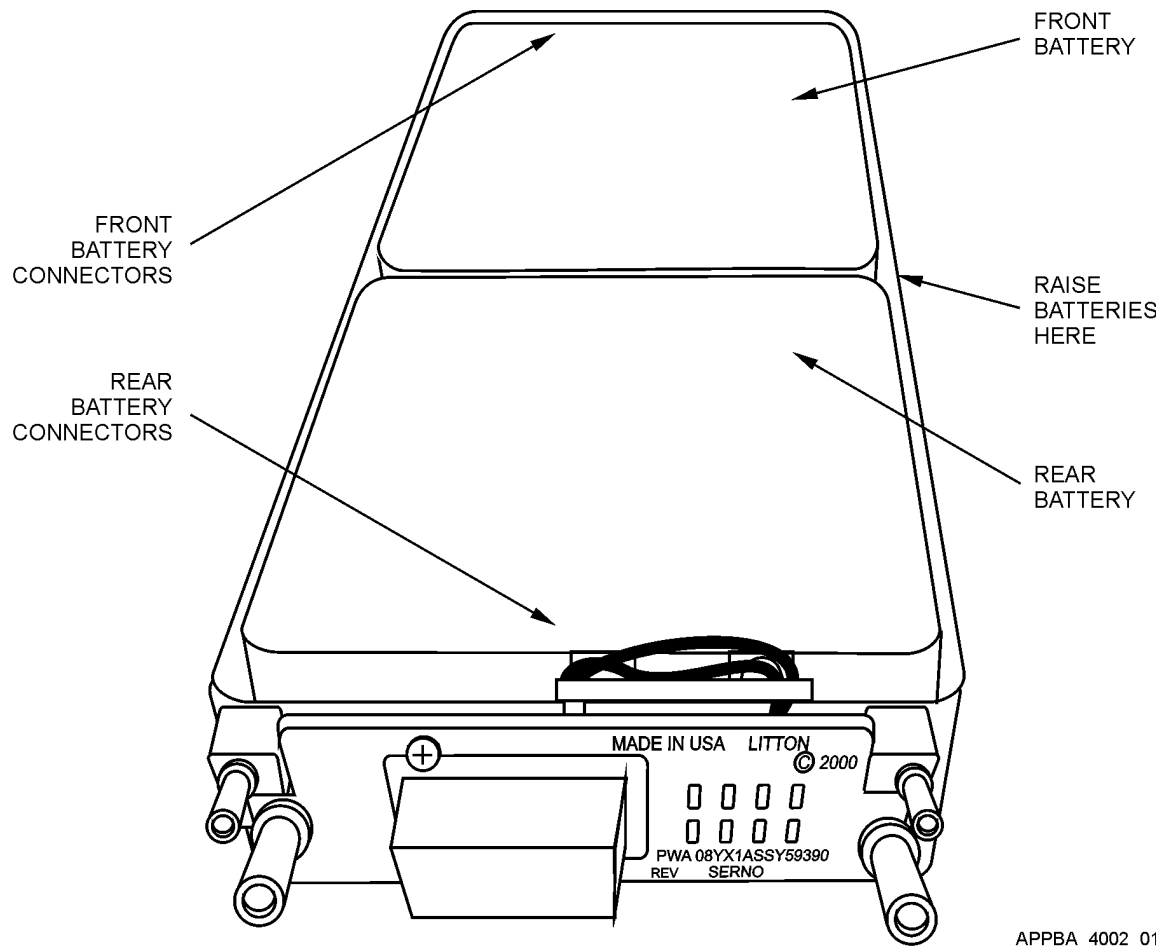
Figure 14 **Remove BB-388/U Rechargeable Batteries**

1. Power down AN/UYK-128(V) Computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

2. Open PU guard/kick plate (M548A3 VOLCANO only).

3. Remove chain from the guard (HMMWV only) if not already accomplished.

4. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

5. Loosen six (6) captive fasteners on RHDDC access door.

REPAIR OR REPLACEMENT–Continued

6. Open RHDDC access door completely.

NOTE

The Battery Carrier Assembly in PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 is located on the interior right side. If the battery assembly is located on the left side of the PU, refer to REMOVE/RE-PLACE BATTERY HOUSING ASSEMBLY for the proper procedure.

7. Loosen one (1) captive fastener on the battery carrier assembly that holds it in place.

8. Grasp wire handle on battery carrier assembly with fingers and pull straight outward with steady pressure until assembly unseats and clears access door.

REMOVE THE BB-388/U RECHARGEABLE BATTERIES (REMOVE RECHARGEABLE BATTERIES IN CARRIER ASSEMBLY (PN 59727-1) FOR PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.)

1. Remove one (1) screw, lock washer, and flat washer on the rear of the battery carrier securing the cover plate to the printed wiring assembly using a No. 1 cross-tip screwdriver. Refer to the two figures above.

2. Loosen five (5) captive screws securing the top cover of the battery carrier using a No. 1 cross-tip screwdriver.

3. Remove battery carrier top cover.

4. Lift both middle ends of batteries from carrier assembly at same time to dislodge batteries.

5. Disconnect the front and rear battery connectors and remove both BB-388/U rechargeable batteries from carrier assembly.

REPAIR OR REPLACEMENT–Continued

INSTALL BB-388/U RECHARGEABLE BATTERIES (INSTALL RECHARGEABLE BATTERIES IN CARRIER ASSEMBLY (PN 59727-1) FOR PU NSN 7021-01-475-0217/NSN 7021-01-487-0579.)

CAUTION

Ensure screw, lock washer, and flat washer have been removed from rear of battery box before removing battery box cover. Failure to remove screw could cause damage to printed wiring assembly on battery box.

Remove battery box cover.

APPBA_4007_01
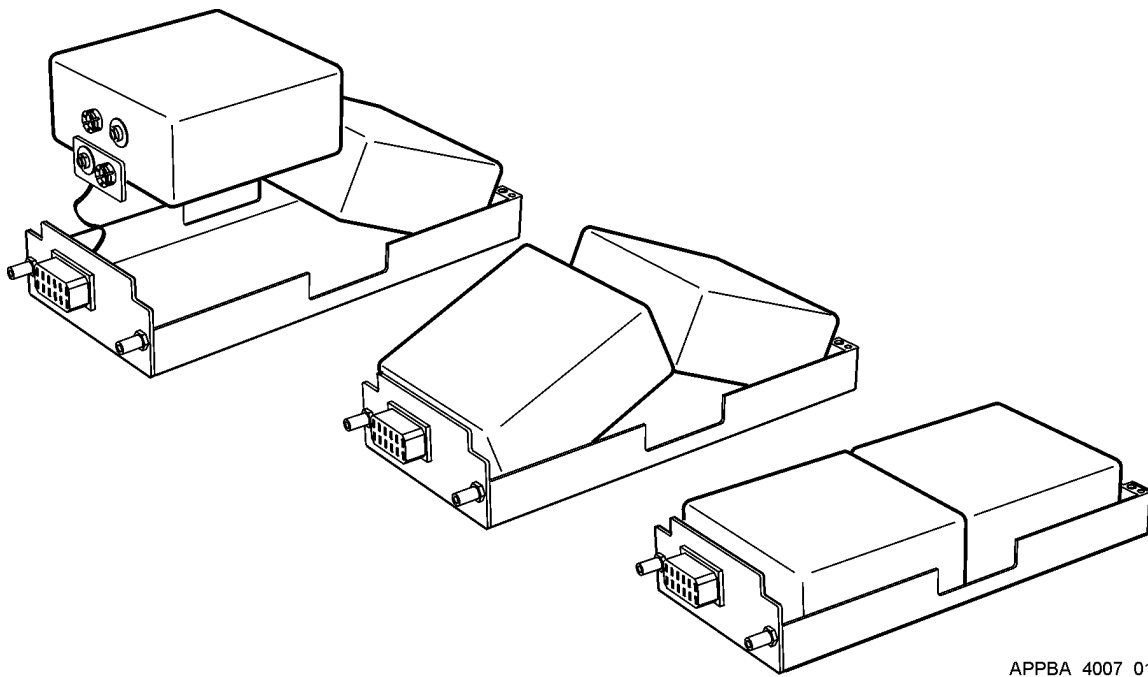
Figure 15 **Install Rechargeable Batteries In Battery Carrier Assembly**

1. Observing polarity, connect replacement BB-388/U rechargeable batteries to front and rear connectors in battery boxcarrier assembly. (Refer to figure above.)

2. Insert batteries into carrier assembly, connector ends first and pointing outward (front and rear), while lifting the rear of both batteries. (Refer to figure above.)

3. Press both batteries down, until batteries both are flat and contacts are secure.

4. Enter date of replacement on label of each battery.

5. Place top cover over battery box and aligning rear screw hole on rear cover with hole on battery box carrier printed wiring assembly (rear connector end of battery box). (Refer to figure above.)

6. Install one (1) screw, lock washer, and flat washer in screw hole on printed wiring assembly on rear (connector end) of battery carrier assembly using a No. 1 cross-tip screwdriver.

7. Tighten the five (5) top captive screws securing the top cover to the battery carrier assembly using a No.1 cross-tip screwdriver.

8. Perform a functional check Table 1.

REPAIR OR REPLACEMENT–Continued

REPLACE BATTERY CARRIER ASSEMBLY (PN 59727-1) FOR PU NSN 7021-01-475-0217/NSN 7021-01487-0579.

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

NOTE

The Battery Carrier Assembly in PU NSN 7021-01-475-0217/NSN 7021-01-487-0579 is located on the interior right side. If the battery assembly is located on the left side of the PU, refer to REMOVE/RE-PLACE BATTERY HOUSING ASSEMBLYthe appropriate portion of this work package for the proper procedure.

1. Grasp battery carrier assembly wire handle with label facing upward toward top of PU.

2. Insert battery carrier assembly carefully into PU slot and slide into place while applying steady pressure until fully seated.

3. Thread captive fastener that holds battery pack in place and ensure it is securely tightened.

4. Ensure no obstruction, such as wire handle or a retaining latch, prevents proper seating of gasket or closure of access door.

NOTE

The RHDDC access door is sealed with a hollow D-strip gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

5. Carefully align and close access door and hold it shut

NOTE

Loosely thread all six (6) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

6. Loosely thread six (6) captive fasteners on access door.

7. Tighten six (6) captive fasteners evenly and securely on access door.

8. Perform AN/UYK-128(V) Computer system startup and login procedures IAW Chapter 2, Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

NOTE

The Functional Check of the backup battery power requires that external power be shut down in order for PU to operate on backup power

9. Perform a functional check as in Table below.

Table 1. BB-388/U Rechargeable Batteries Functional Check

STEP	action	result
1	Activate the AN/UYK-128(V) Computer.	Allow normal boot-up.

REPAIR OR REPLACEMENT–Continued

Table 1. BB-388/U Rechargeable Batteries Functional Check–Continued

STEP	action	result
2	Shut down vehicle power.	AN/UYK-128(V) Computer should continue operation while DU PWR indicator turns red.
3	Restore vehicle power.	AN/UYK-128(V) Computer returns to normal operation.

10. Install lock on PU if required.

11. Install chain on the guard (HMMWV only) if required.

12. Close PU guard/kick plate (M548A3 VOLCANO only).

REMOVE/REPLACE BATTERY HOUSING ASSEMBLY

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause personnel injury or equipment damage.

WARNING

NiMH internal hold-up batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed by water to remove electrolytes. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

Processor Units with internal Light Emitting Diodes (LED) diagnostic displays contain 9-volt non-rechargeable lithium batteries located in battery trays. Batteries may rupture and cause irritation if leaked electrolytes adhere to eyes and skin. Eyes or skin should be immediately washed with water to remove electrolytes. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

WARNING

If Processor Unit batteries leak, remove batteries and clean out the battery compartment with a clean water-dampened cloth, then dry thoroughly. Dispose of batteries in accordance with local servicing Defense Reutilization and Marketing Office (DRMO).

REPAIR OR REPLACEMENT–Continued

WARNING

Before conducting maintenance involving the removal or replacement of system components, ensure that all power to the FBCB2 system including the PLGR is off (including power from the vehicle). Failure to comply with warning may result in equipment damage or injury to personnel.

CAUTION

Equipment Damage

Keep batteries away from extreme temperatures. The battery pack will not function as an Uninterruptable Power Supply (UPS) when the temperature of the batteries is outside of the -20°C to +55°C range.

NOTE

Refer to TM 11-6130-489-13&P for procedures to charge the BB-388A/U BB-388/U rechargeable battery NSN 5820-01-215-6181/NSN 6140-01-419-8190.

The battery housing assembly (P/N 0410-06558-0000) contains the PU backup batteries used in the PU. It holds a single 13.2V (Nickel Metal Hydride) BB-388/U rechargeable battery (NSN 6140-01-419-8190) and one 9V (Lithium) non-rechargeable battery (NSN 6135-01-369-9792). Use the following procedures for removing and replacing the rechargeable and non-rechargeable batteries in the battery housing assembly for PU NSN 7021-01-474-3793/NSN 7021-01-487-0578. Refer to the next five figures.
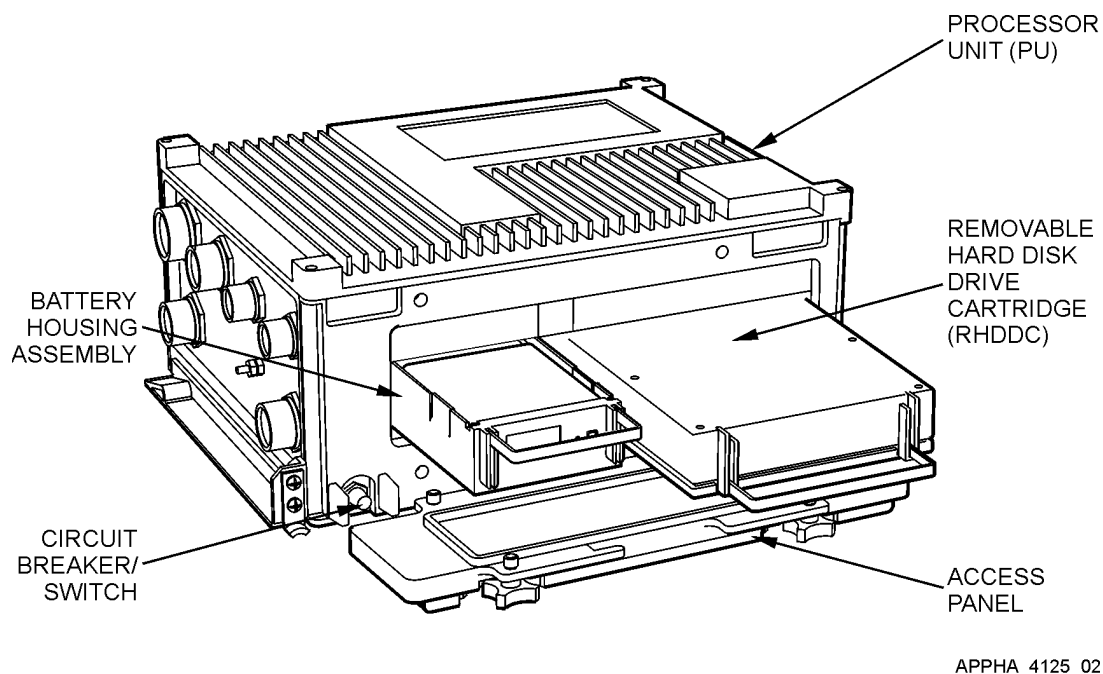

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Figure 16 **Remove/Replace Battery Housing Assembly For PU NSN 7021–01–474–3793/NSN 7021–01–487–0578**

REPAIR OR REPLACEMENT–Continued

1. Power down AN/UYK-128(V) Computer IAW Operator's Manual TM 11-7010-326-10, or Pocket Guide TB 11-7010-326-10.

2. Open PU guard/kick plate (M548A3 VOLCANO only).

3. Remove chain from the guard (HMMWV only) if not already accomplished.

4. Remove lock from PU if not already accomplished.

NOTE

The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

5. Loosen four (4) captive fasteners on RHDDC access door.

6. Open RHDDC access door completely. Refer to the figure above.

NOTE

The Battery Housing Assembly in PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 is located on the interior left side. If the battery assembly is located on the right side of the PU, refer to RE-MOVE/REPLACE BATTERY CARRIER ASSEMBLY FOR PU NSN 7021–01–475–0217/NSN 7021–01–487–0579 for the proper procedure.

NOTE

The handle of this battery housing assembly secures the rechargeable battery against the contacts when in the down position. To release battery, the handle must be raised and pointing outward. There is also a hole in the bottom of the housing to aid in removing the BB-388/U 13.2V rechargeable battery.

7. Raise battery assembly handle up 90 degrees to allow pulling battery housing assembly from PU.

8. Grasp battery assembly handle with fingers and pull straight outward with steady pressure until battery housing unseats and clears access door.

REPAIR OR REPLACEMENT–Continued

REMOVE BB-388/U RECHARGEABLE BATTERY
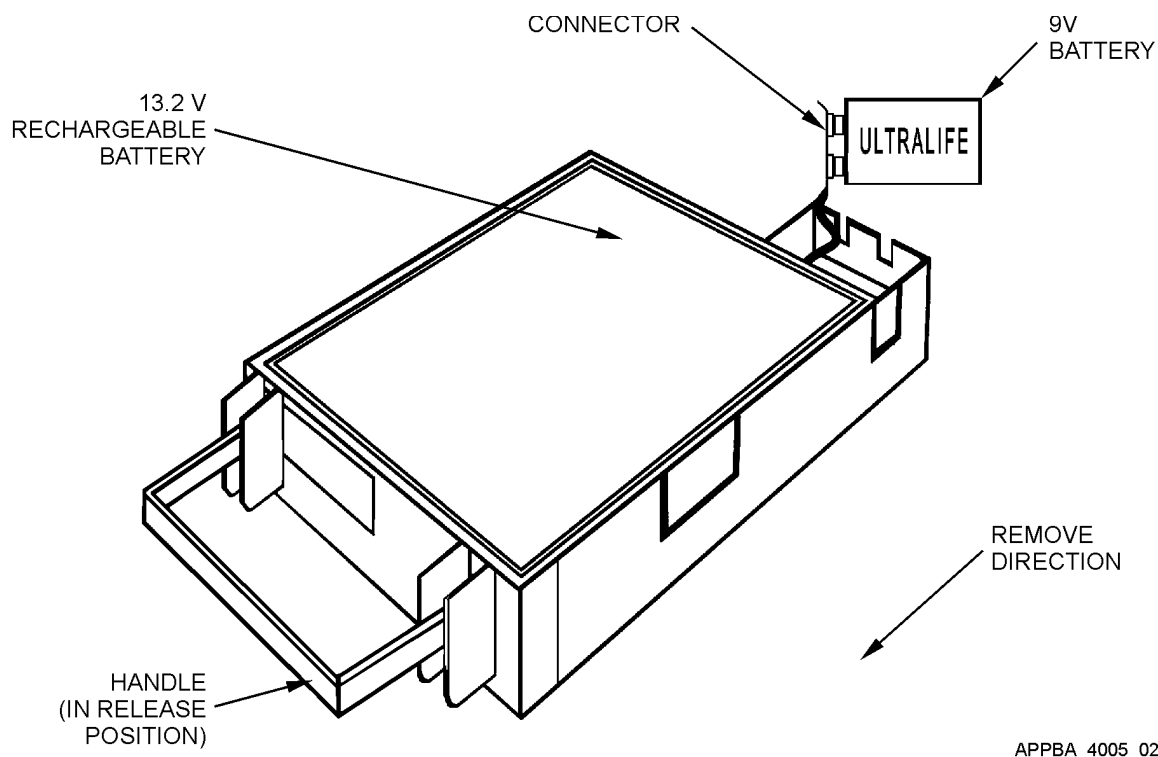
Figure 17 **Remove/Replace Battery Housing Assembly For PU NSN 7021–01–474–3793/NSN 7021–01–487–0578**
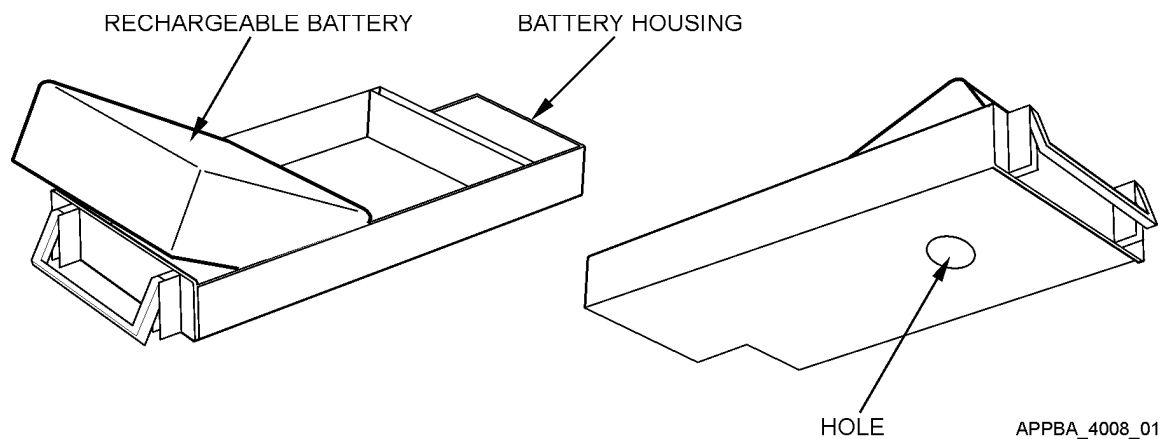
Figure 18 **Remove Rechargeable Battery From Battery Housing Assembly**

1. Hold housing with both hands at the rear printed wiring assembly and push battery with thumbs toward front of assembly (handle end) to disengage BB-388/U 13.2 V rechargeable battery from connectors on the circuit card. Refer to the two figures above.

2. Push 13.2 V rechargeable battery upward with finger through hole in bottom of housing to dislodge battery. (Refer to the figure below.)

REPAIR OR REPLACEMENT–Continued

3. Remove 13.2 V battery from housing.

INSTALL BB-338/U RECHARGEABLE BATTERY

RECHARGEABLE BATTERY BATTERY HOUSING

HOLE APPBA_4008_01
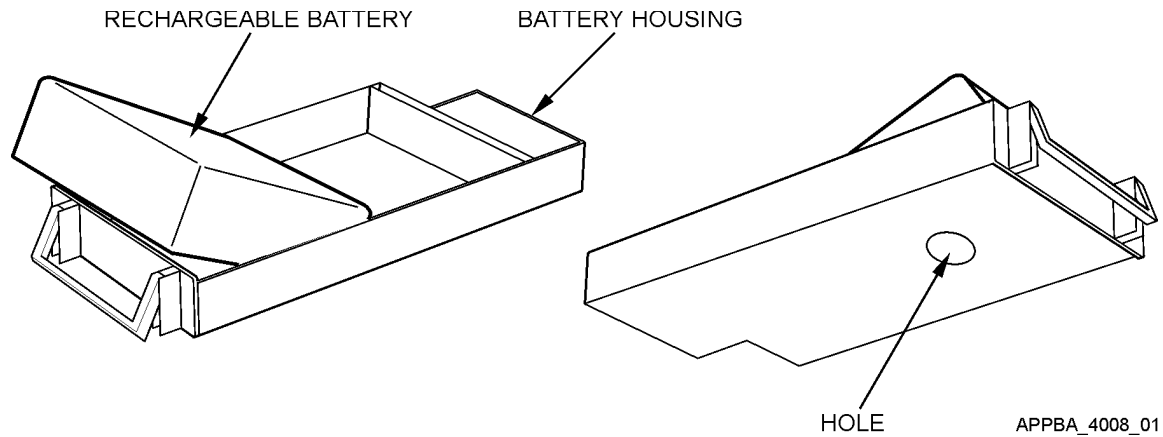
Figure 19 **Install Rechargeable Battery In Battery Housing Assembly**

1. Raise battery assembly handle on front of battery housing up to the release position.

2. Observing polarity, align terminals of replacement BB-388/U 13.2 V rechargeable battery with connectors on printed wiring assembly at rear of battery housing assembly.

3. Insert 13.2V rechargeable battery into battery housing keeping battery terminals aligned to connectors. Refer to figure above.

4. Press down on bottom of 13.2V rechargeable battery and lower battery assembly handle downward to fully engage battery terminals into connectors on printed wiring assembly in housing.

5. Enter date of replacement on label of 13.2 V rechargeable battery.

REPAIR OR REPLACEMENT–Continued

REMOVE 9 VOLT LITHIUM NON-RECHARGEABLE BATTERY
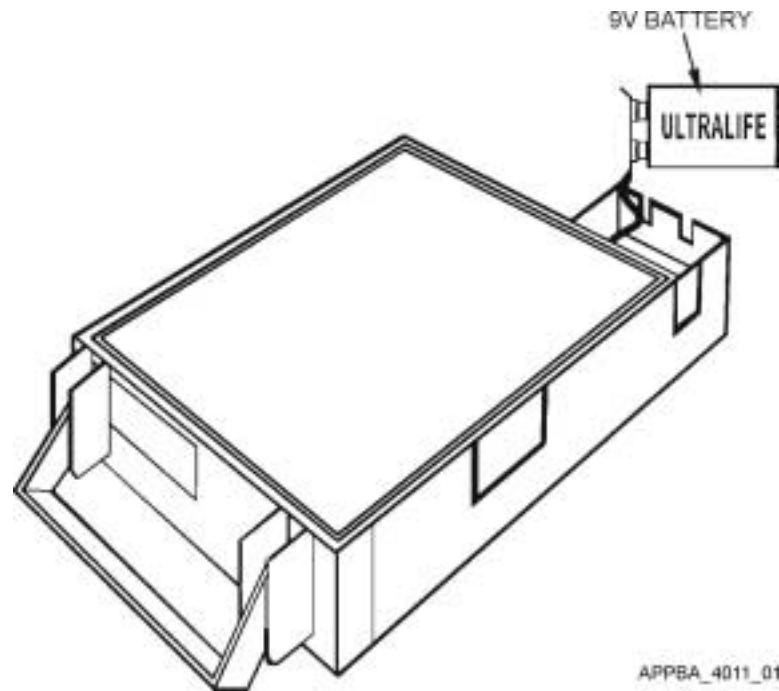
Figure 20 **Remove/Replace Non-Rechargeable 9V Battery**

1. Place hand over top of battery housing opening to support batteries in housing assembly.

2. Turn battery housing assembly upside down.

3. Remove 9V battery from its cavity to gain access to battery connector. Refer to the figure above

4. Turn battery housing assembly upright and disconnect battery connector from 9V non-rechargeable battery.

REPLACE 9 VOLT LITHIUM NON-RECHARGEABLE BATTERY

CAUTION

Ensure access door is free of obstructions and door screws are properly tightened. Failure to comply can cause equipment damage.

1. Connect new 9V battery to connector ensuring correct polarity. Refer to the figure above.

2. Insert non-rechargeable 9V battery into rear cavity of battery housing assembly with wire on connector facing down and toward middle of battery housing.

REPAIR OR REPLACEMENT–Continued
REPLACE BATTERY HOUSING ASSEMBLY (PN 0410-06558-0000) FOR PU NSN 7021-01-474-3793/NSN 7021-01-487-0578

1. Raise battery assembly handle up 90 degrees to the release position. Refer to Figure 17 .

NOTE

> The Battery Housing Assembly in PU NSN 7021-01-474-3793/NSN 7021-01-487-0578 is located on the interior left side. If the battery assembly is located on the right side of the PU, refer to RE-MOVE/REPLACE BATTERY CARRIER ASSEMBLY FOR PU NSN 7021–01–475–0217/NSN 7021–01–487–0579 for the proper procedure.

2. Grasp battery assembly handle with label facing upward toward top of PU.

3. Insert battery housing assembly carefully into PU slot and slide into place while applying steady pressure until fully seated.

4. Lower battery assembly handle and ensure battery housing is securely seated in PU.

5. Ensure no obstruction, such as battery assembly handle, prevents proper seating of gasket or closure of access door.

NOTE

> The RHDDC access door is sealed with an O-ring gasket. Take care not to tear or damage this gasket when opening or closing the access door. Ensure gasket is properly aligned before closing door and securing fasteners.

6. Carefully align O-ring gasket, Electro-Magnetic Impulse (EMI) shield, and close access door and hold it shut

NOTE

> Loosely thread all four (4) captive fasteners before any one fastener is completely tightened, or remaining fasteners may be difficult to thread.

7. Loosel thread four (4) captive fasteners on access door.

8. Tighten four (4) captive fasteners evenly and securely on access door.

NOTE

> The Functional Check of the backup battery power requires that external power be shut down in order for PU to operate on backup power.

9. Perform a functional check as shown in the Table below.

Table 2. Rechargeable Battery (13.2V) Functional Check

STEP	action	result
1	Activate the AN/UYK-128(V) Computer.	Allow normal boot-up.
2	Shut down vehicle power.	AN/UYK-128(V) Computer should continue operation while DU PWR indicator turns red.
3	Restore vehicle power.	AN/UYK-128(V) Computer returns to normal operation.

10. Install lock on PU if required.

11. Install chain on the guard (HMMWV only) if required.

12. Close PU guard/kick plate (M548A3 VOLCANO only).

REPAIR OR REPLACEMENT–Continued
REMOVE 13.2V RECHARGEABLE BATTERY

<div align="center">

WARNING

</div>

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause personnel injury or equipment damage.

<div align="center">

NOTE

</div>

The handle of this tray presses the rechargeable battery against the contacts when in the down position. To release battery, the handle must be pointing out position. There is also a hole in the bottom to help push out the 13.2V rechargeable battery.

RECHARGEABLE BATTERY   BATTERY HOUSING

HOLE   APPBA_4008_01

<div align="center">
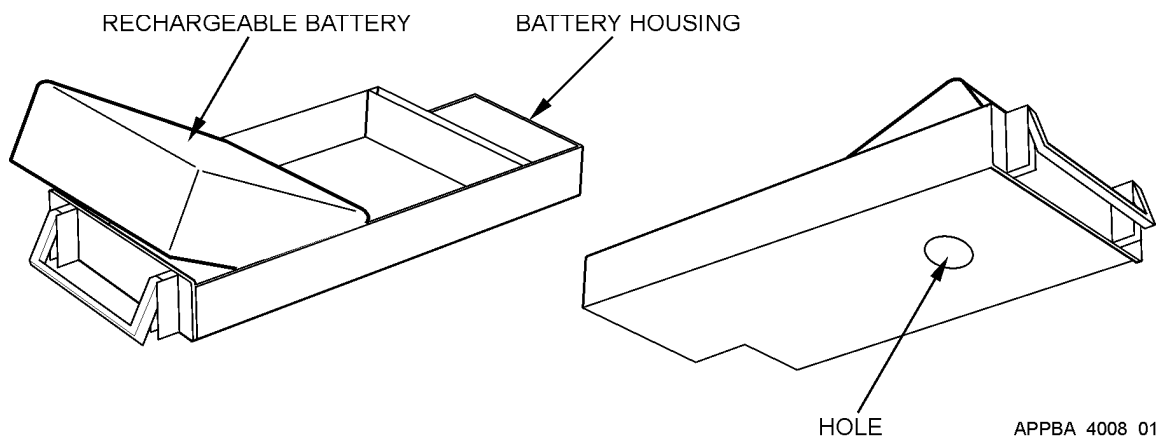
Figure 21 **Remove/Replace Rechargeable Battery**

</div>

1. Place handle on the outside front of the battery tray to the up position.

2. Remove 13.2V rechargeable battery by supporting rear printed wiring assembly and pushing battery toward front of battery tray (handle end) to disengage from battery connector plug on circuit card.

3. Remove 13.2V rechargeable battery from battery tray.

REPLACE 13.2V RECHARGEABLE BATTERY

1. Place handle on the outside front of the battery tray to the release position.

2. Place 13.2V rechargeable battery in battery tray with connectors facing rear and observe polarity.

3. Push on rear of 13.2V rechargeable battery to engage battery to connector on rear printed wiring assembly in battery tray.

4. Carefully lift handle on the outside front of battery tray to fully engage 13.2V rechargeable battery to connector on printed wiring assembly.

REMOVE/REPLACE CABLES

1. Most cables of the same type (W1, W2, W3 SIAD, W3P, W3N, and W4) are removed and replaced the same way at the connector end. Due to various installation configurations, the routing of the cables is different from platform to platform. The removal/replacement procedures, are located in the a separate appendix of TB 11-7010-326-20 for each specific

REPAIR OR REPLACEMENT–Continued

platform. For part numbers and additional hardware information, refer to the applicable appendix of Unit Maintenance TB 11-7010-326-20. Instructions for repairing ground straps and making new ground straps are found below.

TEST AND INSPECTION

COMMON CHECK PROCEDURE

When a problem is suspected:

1. Try to duplicate the problem reported by the operator.

2. Inspect defective unit and associated cables for obvious damage.

3. Isolate the problem to a failed LRU. If the problem is not obvious, refer to WP 0005 00 Troubleshooting Index.

PLATFORM CHECK PROCEDURES

1. Platform check procedures are general in nature. The procedures apply to all platforms. An excellent indication of proper operation is the Power-On Self-Test (POST). If no problems are indicated after initial self-test, refer to the operator's initial complaint. If the original complaint is resolved, the unit is operational. Specific testing procedures are described in detail by the Operator's Manual.

FUNCTIONAL CHECK

Functional Check may be performed whenever operation must be verified as the last step of troubleshooting, removal/replacement, or after periods of non-use.

1. Power up and initialize all interface equipment.

2. Set PU circuit breaker/switch to the ON position.

3. Power up AN/UYK-128(V) Computer by pressing PWR button on display for up to 4 seconds, then release.

NOTE

Observe that the Display Unit PWR, DISP and CPU green LED lights are lit.

Observe that PLGR synchronizes with PU, indicated by the PLGR dialog box showing green.

4. Observe that the Router synchronizes with the PU, indicated by the Router dialog box showing green.

5. At Session Manager screen, select OPS button to display the OPS screen.

6. Verify the GPS status is either green or amber on the Classification/Status Bar.

7. Verify the Communications status is either green or amber on the Classification/Status Bar.

NOTE

Check that PLGR and COM (Communications) are either green or amber. This process could take up to 20 minutes for usable PLGR Time Figure Of Merit (TFOM).

ADJUSTMENT

REPAIR GROUND STRAP

1. If the terminal is loose or comes off one side of a ground strap, clean the exposed end with a wire brush. Use the multipurpose wire stripper/crimper to crimp a new $\frac{1}{4}$" lug (P/N 69405k58) on to the braided end.

MANUFACTURE GROUND STRAP

If the ground strap is damaged or broken make a new ground strap as follows:

1. Measure the braided cable (P/N 123-2, NSN 6145-00-729-9648) and cut it to the required length.

2. Use the multipurpose wire stripper/crimper (P/N 7007K92) to crimp a new $\frac{1}{4}$" (P/N 69405K58) lug on to each of the braided ends.

ADJUSTMENT–Continued
CLEAR INC FROM THE SINCGARS

NOTE

It may be necessary to repeat the clearing procedure 3 or 4 times to clear the INC. Perform this operation.

1. Rotate SINCGARS ASIP R/T Radio Function (FCTN) switch to LD position. FCTN switch position set to LD.
2. Press the 2 button.
   a. Radio Displays RT.
3. Press the 7 button until radio displays LDE.
   a. Radio displays: LDE then LDE-N.

NOTE

If the Receiver/Transmitter (R/T displays NEWIP after LDE-N, press STO button).

4. Press the 1 button.
   a. Radio displays 1.
5. Press the STO button. .
   a. Radio display: DEFLT Then RT
6. Rotate radio function switch to ON position.

   R/T on SINCGARS ASIP radio has FCTN switch position set to ON.
7. Reinitialize AN/UYK-128(V) Computer.
   a. Communication status goes green, problem solved.
   b. Communication status is red or amber, troubleshoot AN/UYK-128(V).

CLEAR INC FROM AN/UYK-128(V) (FBCB2 SOFTWARE)

Access from: "Session Manager" [Start] "FBCB2" "SysAdmin-" The [Clear Router] button is used to clear the INC. The INC must then be reloaded..

From the Task Bar while Offline (but after Login):

1. Select the [Start] button.
   a. The Start option menu is displayed.
2. Select the "FBCB2" menu option.
   a. The "FBCB2" option menu is displayed.
3. Select the "SysAdmin..." option.
   a. The "System Administration Dialog" box is displayed.
4. Select the "Select User Name:" [Down Arrow] button.
5. Select an option.
   a. System displays the "System User Name" option list.
   b. System displays the selected option in the "Select User Name:" text box.
6. Select the "Enter Password:" text box. Enter the password.
   a. System displays the cursor in the "Enter Password:" text box.
   b. System displays asterisks in the "Password" text box.
7. Select the [Continue] button.
   a. System displays the "System Administration" dialog box.
8. Select the "Miscellaneous" tab if not already selected.

ADJUSTMENT–Continued
     a.   System displays the "Miscellaneous" tab group.

9.   Select the [Comm Tools] button.
     a.   System displays the "Comm Tools" dialog box.

10.   Select the [Clear Router] button.
     a.   System displays dialog box and query, "Which router do you want to clear?"

TO CLEAR ROUTER 1:

1.   Select the [Router 1] option button.
     a.   System black-fills the option button.

2.   Select the [Continue] button.
     a.   System displays the "Clear Router" pane. When completed "Press ENTER to continue" message is displayed in pane.

3.   Select the "Enter" key.
     a.   System displays the "Comm Tools" dialog box.

4.   Proceed to Reload INC (Router).

TO CLEAR ROUTER 2:

1.   Select the [Router 2] option button.
     a.   System black-fills the option button.

2.   Select the [Continue] button.
     a.   System displays the "Clear Router" pane.When completed "Press ENTER to continue" message is displayed in pane.

3.   Select the "Enter" key.
     a.   System displays the "Comm Tools" dialog box.

4.   Proceed to Reload INC (Router).

TO CLEAR BOTH ROUTER 1 AND 2

1.   Select the [Router 1 and 2] option button.
     a.   System black-fills the option button.

2.   Select the [Continue] button.
     a.   System displays the "Clear Router" pane.When completed "Press ENTER to continue" message is displayed in pane.

3.   Select the "Enter" key.
     a.   System displays the "Comm Tools" dialog box.

4.   Proceed to Reload INC (Router).

RELOAD INC (ROUTER)

1.   Select the [Reload Router] button.
     a.   The system displays the dialog box and the query "How do you want to load the router?"

RELOAD ROUTER FROM THE DATABASE

1.   Select the "From the database" radio button.
     a.   The system black-fills the radio button.

2.   Select the [Continue] button.
     a.   The system displays the "Reload Router" pane. When completed "Press ENTER to continue" message is displayed in pane.

3.   Select the "Enter" key.
     a.   The system displays the "Comm Tools" dialog box.

ADJUSTMENT–Continued

4.   Proceed to step 6 from Reload Router from a MIB Log File.

RELOAD ROUTER FROM A MIB LOG FILE

1.   Select the "From a MIB log file" option button.

   a.   The system black-fills the radio button.

2.   Select the "Select a File" text box.

   a.   The system displays the cursor in the "Select a File" text box.

3.   Enter a filename path.

   a.   The system displays the filename path in the "Select a File" text box.

4.   Select the [Continue] button.

   a.   The system displays the "Reload Router" pane.When completed "Press ENTER to continue" message is displayed in pane.

5.   Select the "Enter" key.

   a.   The system displays the "Comm Tools" dialog box.

6.   Select the [Done] button. "Comm Tools" dialog box closes.

7.   Select the [Cancel] button. "System Administration" dialog box closes.

RESETTING THE HARD DISK (MAKE MASTER)

If the RHDDC seems to be at fault and a replacement is not available, the RHDDC may be reset to it's default condition. This may cause the loss of message data and role information.

1.   Clear the INC.

2.   Select the following in order: Start, FBCB2, SystAdmin...option.

3.   In System Administration dialog box, using Select User Name down arrow, select fbcadmin.

4.   Enter password and select Continue button.

5.   Select Configure System tab.

6.   Select the Return to Master button.

7.   Answer "y" to "Are you sure you want to make Master of this system?" and press Enter key.

8.   Allow system to continue building files until the message, "Return To Master Processing Successful" appears.

9.   Any failures during this process will require that the RHDDC be changed.

10.   Press ENTER to continue. Proceed to Configure Role.

BIOS REPAIRS FOR NSN 7021-01-475-0217/NSN 7021–01–487–0579

During the Boot Process Ram Count.

1.   Enter the Basic Input/Output System (BIOS) by pressing the F2 key. Press the F9 key and load the default settings.

2.   Arrow down to Floppy disk A drive, using the minus key select disable.

3.   Press F10, to save the configuration, and exit the BIOS.

4.   While the software is rebooting the RAM count will continue to count to 191MB. Let the software boot to the screen that states "Initializing System Please Wait". Turn off the AN/UYK-128(V) PU at the circuit breaker switch.

5.   Wait 10 seconds and reboot the AN/UYK-128(V) to the BIOS. (Please Note that the RAM counts should not be seen counting at this time.)

6.   Arrow down to the Floppy disks A drive and using the minus key select the 1.44/1.25MB drive.

7.   Press F10 to save the configuration.

8.   Select the Yes button in the dialog window to reboot the AN/UYK-128(V) Computer.

ADJUSTMENT–Continued

When The AN/UYK-128(V) Will Not Recognize The Hard Drive And Displays Non System Disk. Replace And Press Any Key To Continue.

NOTE

An exclamation mark (!) next to the device means the device is disabled. Pressing the shift and + keys simultaneously will remove the !.

1. Reboot the AN/UYK-128(V) and enter the BIOS by pressing the F2 key. Press the F9 key and load the default settings.

2. Look at the Primary Master and note the size of the hard drive. If the hard drive is recognized, then arrow over the BOOT menu, then arrow down, highlight the hard drive, and press the enter key.

3. If you see the Boot add-in card on top of the IBM drive, you will need to change the boot sequence to IBM on top of the Boot add-in card. To do this, arrow down to the IBM drive, press the shift, and the plus keys simultaneously. This will switch the boot sequence.

4. Press F10 and save the configuration. Then reboot the AN/UYK-128(V).

5. Problem not solved, replace RHDDC and recheck BIOS.

6. Problem solved. If not, replace PU.

BIOS REPAIRS FOR NSN 7021-01-474-3793

When AN/UYK-128(V) Boots To Windows Diagnostic Screen.

NOTE

An exclamation mark (!) next to the device means the device is disabled. Pressing the shift and + keys simultaneously will remove the !.

1. Reboot the AN/UYK-128(V) and enter the BIOS by pressing the F2 key. Press the F9 key and load the default settings.

2. Look at the Primary Master and note if you can see the size of the hard drive. If the hard drive is recognized, then arrow over the BOOT menu, then arrow down, highlight the hard drive, and press the enter key.

3. If you see the Boot add-in card on top of the IBM drive, you will need to change the boot sequence to IBM on top of the Boot add-in card. To do this arrow down to the IBM drive, press the shift and plus keys simultaneously. This will switch the boot sequence.

4. Press F10 to save the configuration.

5. Select the Yes button in the dialog window to reboot the AN/UYK-128(V) Computer.

6. Problem not solved, replace RHDDC and recheck BIOS.

7. Problem solved. If not, replace PU.

When Ram Count Is Visible During The Boot Process.

1. Enter the BIOS by pressing the F2 key. Press the F9 key and load the default settings.

2. Press F10, save the configuration, and exit the BIOS.

3. While the software is rebooting the RAM count will continue to count to 191MB. Let the software boot to the screen that states "Initializing System Please Wait". Turn off the AN/UYK-128(V) PU at the circuit breaker switch.

4. Wait 10 seconds and reboot the AN/UYK-128(V) to the BIOS. (Please Note that the RAM counts should not be seen counting at this time.)

ADJUSTMENT–Continued
CONFIGURING BIOS FROM STANDARD CONFIGURED AN/UYK-128(V) TO BRADLEY HEADLESS SYSTEM FOR PU NSN 7021–01–475–0217/NSN 7021–01–487–0579

Following procedure is used for converting the BIOs settings from a standardconfigured AN/UYK-128(V) Computer system to the BIOS settings for use in a Bradley headless system.

NOTE

The headless software cannot be booted in a standalone system.

1. Insert the RHDDC into the PU and perform AN/UYK-128(V) startup.

2. Press F2 key to enter the setup screen.

3. Disable the 3 1/2 floppy drive on the Main menu by scrolling down to the Legacy Diskette A: and using the minus key (-), press it until the Legacy Diskette A: displays Disabled.

4. Scroll to the Boot menu using the arrow keys. Using the arrow key(s)scroll down until Removable Devices is highlighted and press Enter key.

5. Scroll down to the Legacy Floppy Drives and press the Shift and ! keys simultaneously to disable the floppy drive (this will place an exclamation mark (!) next to the device that is being disabled). Scroll back up to the Removable Devices and press the Shift and ! keys simultaneously again (this will place an exclamation mark (!) next to the Removable Devices).

6. Using the arrow keys, scroll down to the ATAPI CD-ROM Drive and press the Shift and ! keys simultaneously to disable the ATAPI CD-ROM Drive (this will place an exclamation mark (!) next to the device that is being disabled).

7. Scroll back up to the Hard Drive and press the Shift and + keys simultaneously to place the Hard Drive on the top of the Boot menu.

8. Press the F10 key to save the BIOS settings.

9. Select the Yes button in the Setup Configuration dialog box and press Enter key to reboot the AN/UYK-128(V) Computer.

CONFIGURING BIOS FROM BRADLEY HEADLESS SYSTEM TO STANDARD CONFIGURED AN/UYK-128(V) FOR PU NSN 7021–01–475–0217/NSN 7021–01–487–0579

Following procedure is used for converting the BIOS settings from a Bradley headless system to BIOS settings used in the standard configured AN/UYK-128(V) Computer system.

NOTE

The headless software cannot be booted in a standalone system.

1. Insert the RHDDC into the PU and perform AN/UYK-128(V) Computer startup.

2. Press F2 to enter the setup screen.

3. Enable the 3 1/2" floppy drive on the Main menu by scrolling down to the Legacy Diskette A:, then press the - key until the Legacy Diskette A: drive displays: Disabled.

4. Scroll to the Removable Devices and press the Shift and ! keys simultaneously (this will remove the exclamation mark (!) next to the ATAPI CD-ROM).

5. Scroll down to the ATAPI CD-ROM and press the Shift and ! keys simultaneously to enable the ATAPI CD-ROM (this will remove the (!) next to the ATAPI CD-ROM).

6. Scroll back up to the Hard drives and press the Shift and + keys simultaneously to place the Removable Devices on the top of the boot menu.

7. Press the F10 key to save BIOS settings.

8. Select the Yes button in the Setup Confirmation dialog box and press Enter key to save configuration changes and reboot the AN/UYK-128(V) Computer.

9. During reboot, press the F2 key to reenter the setup screen.

ADJUSTMENT–Continued

10. Scroll over to the Boot menu. Scroll down to Removable Devices and press the Enter key. Scroll down to the Legacy Floppy Drives and press the Shift and ! keys simultaneously to enable the floppy drive (this will remove the exclamation mark (!) next to the Legacy Floppy Drives).

11. Press the F10 key to save the BIOS settings.

12. Select the Yes button in the Setup Confirmation dialog box and press Enter key to reboot the AN/UYK-128(V) Computer.

13. Power the PU OFF.

CLEAR LOGS AND QUEUES

The "Clear Logs and Queues" function allows the user to delete queues, playback logs, user folder entries and Situational Awareness (SA) data from the system memory.

From the Task Bar while Offline (but after Login):

1. Select the [Start] button.

    a. The "Start" option menu is displayed.

2. Select the "FBCB2" menu option.

    a. The "FBCB2" option menu is displayed.

3. Select the "Clear Logs and Queues..." option.

    a. The "Clear Logs and Queues" dialog box is displayed.

4. Under "Select Items to Clear", select options by selecting check box(es) next to the item(s) you want to clear. The selected item(s) are shown with a check mark displayed in their corresponding check box(es).

5. Select the [Apply] button to clear the selected options.

    a. The "Clear Logs and Queues Status" dialog box is displayed.

6. Select the [Close] button when the following message is displayed: "COMPLETED CLEAR LOGS & QUEUES OPERA-TION." The "Clear Logs and Queues Status" dialog box closes.

7. Select the [Close] button.

    a. The "Clear Logs and Queues" dialog box closes.

CONFIGURE ROLE

Access from: "Session Manager" [Start] "FBCB2" "Configure Role." The "Configure Role" option allows the user to change Role/ID and reconfigure the system to a new Role/ID.

From the Task Bar while Offline (but after Login):

1. Select the [Start] button.

    a. The Start option menu is displayed.

2. Select the "FBCB2" menu option.

    a. The "FBCB2" option menu is displayed.

3. Select the "Configure Role" option.

    a. Configure Role dialog box is displayed.

4. Select the "Division:" [Down Arrow] button. Select an option from the list.

    a. System displays the Division option list. System displays the selection in the "Division:" text box.

5. Select the "Brigade:" [Down Arrow] button. Select an option from the list.

    a. System displays the Brigade option list. System displays the selection in the "Brigade:" text box.

6. Select the "Battalion:" [Down Arrow] button. Select an option from the list.

    a. System displays the Battalion option list. System displays the selection in the "Battalion:" text box.

7. Select the "Company:" [Down Arrow] button. Select an option from the list.

    a. System displays the Company option list. System displays the selection in the "Company:" text box.

ADJUSTMENT–Continued

8. Select the "Platoon:" [Down Arrow] button. Select an option from the list.

    a. System displays the Platoon option list. System displays the selection in the "Platoon:" text box.

9. Select an option from the "Matching Roles:" option list (if applicable).

    a. System highlights the selection.

10. Select the [Configure-] button.

    a. System displays the "Verification" dialog box.

11. Select the [Yes] button on the "Verification" dialog box. "Verification" dialog box closes.

    a. System configures the Role/ID and displays the "Role Configuration Progress" dialog box.

12. Select the [Reboot] button.

    a. System reboots.

MISSION DATA DOWNLOAD/UPLOAD

WARNING

Do not disconnect or connect any cables without first properly powering down the system and turning off all power. Where applicable, always disconnect the ground cable last when disassembling and always connect the ground cable first when assembling. Failure to comply can cause injury to personnel or equipment damage.

NOTE

When connecting the DTD/MDL to the AN/UYK-128(V) DU, the system must be powered up and at the Session Manager screen.

This section consists of procedures for downloading mission data to the DTD/MDL and uploading the mission data to a AN/UYK-128(V) Computer. Startup the AN/UYK-128(V) Computer. After login, connect the DTD/MDL to the AN/UYK-128(V) Processor Unit (J5 connector) or Display Unit (disconnect Keyboard Unit from the J2 of the DU and connect the DTD/MDL to the J2 connector).

Mission Data Download.

1. From the Session Manager screen select the Start button.

    a. The Start option menu is displayed.

2. Select the FBCB2 option.

    a. The FBCB2 option menu is displayed.

3. Select the Mission Data Load option.

    a. The Mission Data Load option menu is displayed.

4. Select the Create MDL option.

    a. The Mission Data Create dialog box is displayed.

5. Select a data file from the Available Data Files: pane.

    a. The selected file name is highlighted.

6. Select a folder name from the Current Missions: pane.

    a. The selected folder name is highlighted.

7. Select the Add Data File button.

    a. The data file is copied to the Current Missions: pane.

ADJUSTMENT–Continued

8. Select the Write Mission to MDL... button.

    a. The Write Mission dialog box is displayed.

9. Select the down arrow.

    a. System displays the option list.

10. Select an option, Portable Media or Local Drive.

    a. If the Portable Media option is selected; the system displays the Media Check dialog box.

    b. If Local Drive option is selected; the option list closes and the selected option is displayed in the text box.

11. If Portable Media option was selected; select the Yes button.

    a. The Media Check dialog box closes.

12. Select the OK button.

    a. The Write Mission dialog box is displayed with successful status.

13. Select the OK button.

    a. The Write Mission dialog box closes.

Mission Data Upload.   The procedure below provides for loading the mission data to an AN/UYK-128(V) Computer or TOUGHBOOK Computer from the MDL.

1. From the Session Manager screen select the Start button.

    a. The Start option menu is displayed.

2. Select the FBCB2 option.

    a. The FBCB2 option menu is displayed.

3. Select the Mission Data Load option.

    a. The Mission Data Load option menu is displayed.

4. Select the Install MDL option.

    a. The Mission Data Extractor/Installer dialog box is displayed.

5. Select the Media down arrow.

    a. System displays the Media option list.

6. Select an option.

    a. Option list closes and the selected option is displayed in the Media text box.

7. Select a folder name from the Missions on MDL: pane.

    a. The selected folder name is highlighted.

8. Select a folder name from the Mission Extracted: pane.

    a. The selected folder name is highlighted.

9. Select the Extract button.

    a. The system will copy the selected file from the Missions on MDL: pane to the Mission Extracted: pane and display the Extract Successful! Dialog box.

10. Select the OK button.

    a. The Extract Successful! dialog box closes.

11. Select the Install button.

    a. The system will display the Install? confirmation dialog box.

12. Select the Yes button.

    a. The Install? dialog box closes and the system displays the Install Complete! dialog box.

13. Select the OK button.

    a. The Install Complete! dialog box closes.

14. Select the Close button.

ADJUSTMENT–Continued

    a.   The Mission Data Extract/Installer dialog box closes.

CALIBRATION

TOUCHSCREEN CALIBRATION

Touchscreen calibration is required when the Display Unit (DU), Processor Unit (PU), and/ or Removable Hard Disk Drive Cartridge (RHDDC) is replaced. Touch screen calibration may be required after long periods of operation in the field. Perform AN/UYK-128(V) startup and login procedures before attempting calibration.

1.   Select the Start button.

2.   Select the Settings option.

3.   Select the Touchscreen option.

    a.   The calibration touchscreen is displayed with a target bulls eye at the lower left corner.

4.   Select center of target bull's eye with the stylus.

    a.   The calibration touchscreen is displayed with a target bulls eye at the upper right corner.

5.   Select center of target bull's eye with the stylus.

    a.   The calibration touchscreen is displayed with a target bulls eye at the lower right corner.

6.   Select center of target bull's eye with the stylus.

    a.   The calibration touchscreen closes.

    b.   The osc-touch-calibration.ksh dialog box is displayed.

    c.   The osc_touch_calibrate.ksh dialog box closes.

7.   Type the letter "Y".

8.   Select the "Enter" key.

END OF WORK PACKAGE

CHAPTER 4

UNIT MAINTENANCE

SUPPORTING INFORMATION

FOR

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW (FBCB2)

CHAPTER 4

UNIT MAINTENANCE
SUPPORTING INFORMATION

WORK PACKAGE INDEX

UNIT MAINTENANCE

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA

REFERENCES

Scope

This work package list the forms, field manuals, technical bullitens, technical manuals, and miscellaneous publication referenced in this manual.

FORMS

AR 735-11-2(JAR)	Reporting of Item and Packaging Discrepancies
ASTM-D3951-90	Packaging, Commercial
DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2028-2	Recommended Changes to Equipment Technical Publications
DA2407	Maintenance Request Form

FIELD MANUALS

FM 21-11	First Aid For Soldiers

TECHNICAL MANUALS

DA PAM 25-30	Consolidated Index of Army Publications and Blank Forms
DA PAM 738-750	The Army Maintenance Measurement System (TAMMS)
MIL-STD-188/220A	Interoperability Standard For Digital Message Transfer Device Subsystems
MIL-STD-1275A(2)	Electrical Circuit, 28 Volts DC Transient Characteristics For Military Vehicles
TM 5-2350-262-20-1	Unit Maintenance Manual, Armored Combat Earthmover (ACE), M9, (2350-00-808-7100)
TM 9-2320-280-20	Technical Manual Unit Maintenance, HMMWV
TM 11-6130-489-13&P	Technical Manual Operator's, Unit, And Direct Support Maintenance Manual (Including Repair Parts And Special Tools List) Battery Charger PP-8444/U (NSN 6130-01-427-9604) and Battery Charger PP-8444A/U (NSN 6130-01-443-0970)
TM 11-7010-326-10	Force XXI Battle Command Brigade-and-Below Operator's Manual
TB 11-7010-326-10	FBCB2 Pocket Guide (AN/UYK-128(V))
TM 11-5825-291-13	Satellite Signals Navigation Set AN/PSN-11 (PLGR)
TM 43-0158 (Army)	Care And Handling of Electronic Equipment
TM 11-5820-890-10-1	Operator's Manual for SINCGARS Ground Combat Net Radio ICOM
TM11-5825-283-10	Operator's Manual for Enhanced Position Location Reporting System (EPLRS)
MIL-F-7179	Corrosion Prevention and Control (CPC)
MIL-C-46168	Chemical Agent Resistant Coatings (CARC)

MISCELLANEOUS PUBLICATIONS

TB 385-4 (Army)	Safety Precautions During The Maintenance of Electrical/Electronic Equipment
DOD-STD-1686	ESDS Device Handling Procedures
D3951-90	American Society for Testing Materials (ASTM) Standard Practice for Commercial Packaging

END OF WORK PACKAGE

UNIT MAINTENANCE

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA

MAINTENANCE ALLOCATION CHART (MAC)

INTRODUCTION

The Army Maintenance System MAC.

1. This introduction provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.
2. The Maintenance Allocation Chart (MAC) in Explanations of Columns in the MAC designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:
    Unit - contains two sub-columns, C (Operator/crew) and O (unit) maintenance.
    Direct Support - contains an F sub-column
    General/Intermediate Support Maintenance - contains an H sub-column
    Depot Maintenance - contains a D sub-column
3. Explanation of Columns in Tools and Equipment Requirements lists the tools, test equipment (both special tools and common tool sets) and support equipment required for each maintenance function as referenced from the section before.
4. Explanation of Columns in Remarks contains supplemental instructions and explanatory notes for a particular maintenance function.

Maintenance functions are limited to and defined as follows:

Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (i.e., by sight, sound, or touch).
Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.
Service. Operations required periodically to keep an item in proper operating condition; i.e., to clean (include decontaminate, when required), to preserve, to drain, or to paint.
Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.
Align. To adjust specified variable elements of an item to bring about optimum or desired performance.
Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.
Remove/Install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacement, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.
Replace. To remove an unserviceable item and install a serviceable counterpart in its place. -Replace- is authorized by the MAC and assigned maintenance level is shown as the 3d position code of the Source Maintenance and Recoverability (SMR) code.
Repair. The application of maintenance services1 including fault location/troubleshooting2, removal/installation and disassembly/assembly3 procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

Explanation of Columns in the MAC

INTRODUCTION–Continued

Column 1, Group Number. Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

Column 2, Component/Assembly. Column 2 contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column 3, Maintenance Function. Column 3 lists the functions to be performed on the item listed in Column 2.

Column 4, Maintenance Level. Column 4 specifies each level of maintenance authorized to perform each function listed in Column 3, by indicating work time required (expressed as work hours in whole hours or decimals) in the appropriate sub-column. This work-time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work-time figures are to be shown for each level. The work-time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time consists of preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart.

The symbol designations for the various maintenance levels are as follows:

C Operator or crew maintenance

O Unit/Organizational maintenance

F Direct/Intermediate support maintenance

D Depot maintenance

H General/Intermediate support maintenance (Not applicable to this issue)

Column 5, Tools and Equipment reference code. Column 5 specifies, by code, those common tool sets (not individual tools), common TMDE, and special tools, special Test, Measurement, and Diagnostic Equipment (TMDE), and special support equipment required to perform the designated function. Codes are keyed to tools and test equipment in Explanation of Columns in Tools and Equipment Requirements.

Column 6, Remarks. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks contained in Explanation of Columns in Remarks.

Explanation of Columns in Tools and Equipment Requirements

Column 1, Reference Code. The tools and equipment reference code correlates with a code used in the MAC, Explanation of Columns in the MAC, Column 5.

Column 2, Maintenance Level. The lowest level of maintenance authorized to use the tool or equipment.

Column 3, Nomenclature. Name or identification of the tool or equipment.

Column 4, National Stock Number. The National Stock Number of the tool or equipment.

Column 5, Tool Number. The part or model number of the tool or equipment.

Explanation of Columns in Remarks

Column 1, Remarks Code. The code recorded in column 6, Explanation of Columns in the MAC.

Column 2, Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC,Explanation of Columns in the MAC .

END OF WORK PACKAGE

UNIT MAINTENANCE

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA

MAINTENANCE ALLOCATION CHART (MAC)

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	UNIT C	UNIT O	(4) MAINTENANCE LEVEL DIRECT SUPPORT F	GENERAL SUPPORT H	DEPOT D	(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
00	Computer Set,Digital AN/UYK-128(V)1 & (V)2 (FBCB2)	INSPECT	.1						
00	Computer Set,Digital AN/UYK-128(V)1 & (V)2 (FBCB2)	TEST		.25					A
00	Computer Set,Digital AN/UYK-128(V)1 & (V)2 (FBCB2)	REPAIR		.5				2	B
01	Computer Set,Digital (Processor Unit - PU)	INSPECT	.10						
01	Computer Set,Digital (Processor Unit - PU)	TEST		.50					A
01	Computer Set,Digital (Processor Unit - PU)	REPAIR		.30					C
01	Computer Set,Digital (Processor Unit - PU)	REPLACE		.73				1	D
01	Computer Set,Digital (Processor Unit - PU)	REPAIR					X		E
0101	Tray, Battery Holder	INSPECT	.1						
0101	Tray, Battery Holder	REPAIR		.2				1	C
0101	Tray, Battery Holder	REPLACE		.1					B
01	Tray, Battery Holder	REPAIR					X		E
02	Hard Disk Drive (Removable Hard Disk Drive - RHDD)	INSPECT	.1						
02	Hard Disk Drive (Removable Hard Disk Drive - RHDD)	TEST		.25					A
02	Hard Disk Drive (Removable Hard Disk Drive - RHDD)	REPLACE		.12					D
02	Hard Disk Drive (Removable Hard Disk Drive - RHDD)	REPAIR			.50				F
02	Hard Disk Drive (Removable Hard Disk Drive - RHDD)	REPAIR					X		E
03	Display Unit (Display Unit - DU)	INSPECT	.1						
03	Display Unit (Display Unit - DU)	TEST		.25					A
03	Display Unit (Display Unit - DU)	REPAIR		.25				1	G

–Continued

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	UNIT C	UNIT O	(4) MAINTENANCE LEVEL DIRECT SUPPORT F	GENERAL SUPPORT H	DEPOT D	(5) TOOLS AND EQUIPMENT REF CODE	(6) REMARKS CODE
03	Display Unit (Display Unit - DU)	REPLACE		.33				1	D
03	Display Unit (Display Unit - DU)	REPAIR					X		E
04	Keyboard, Data Entry (Keyboard Unit - KU)	INSPECT	.1						
04	Keyboard, Data Entry (Keyboard Unit - KU)	TEST		.25					A
04	Keyboard, Data Entry (Keyboard Unit - KU)	REPLACE		.23					D
04	Keyboard, Data Entry (Keyboard Unit - KU)	REPAIR					X	1	E

TOOLS OR TEST EQUIP REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	O	Tool Kit, Electronic Equipment TK-101/G	5180-00-064-5178	TK101GISSUE6
2	O	Multimeter AN/PSM-45A (DVM)	6625-01-265-6000	AN/PSM-45A

REMARKS

REMARK CODE	REMARKS
A	TEST SIGNALS/SYSTEMS USING BUILT-IN-TEST (BIT) AND DIAGNOSTIC EQUIPMENT AS PER SECTION IV TROUBLESHOOTING.
B	REPAIR BY REMOVING AND REPLACING LRUS AS DISCUSSED IN SECTION V. A WARRANTY IS PROVIDED WITH ALL LRUS. ANY LRUS REQUIRING REPAIR BEYOND DS LEVEL ARE TO BE EVACUATED TO THE CONTRACTOR AS PER THE WARRANTY TB.
C	REPAIR BY REPLACING BATTERY BB-388/U. ANY LRUS REQUIRING REPAIR BEYOND UNIT MAINTENANCE ARE TO BE EVACUATED TO THE SUPPORTING DIRECT SUPPORT FACILITY.
D	REPLACE AS PER SECTION V AND EVACUATE TO SUPPORTING DIRECT SUPPORT FACILITY.
E	A WARRANTY IS PROVIDED WITH ALL LRUS. ANY LRUS REQUIRING REPAIR BEYOND DIRECT SUPPORT MAINTENANCE ARE TO BE EVACUATED TO THE CONTRACTOR AS PER THE WARRANTY BULLETIN.
F	REPAIR BY LOADING SOFTWARE AS PER CHAPTER 2, SECTION III OF TM 11-7010-326-30
G	REPAIR BY REPLACING STYLUS AND TETHER. ANY LRUS REQUIRING REPAIR BEYOND UNIT MAINTENANCE ARE TO BE EVACU-ATED TO THE SUPPORTING DIRECT SUPPORT FACILITY.
H	TEST BY PERFORMING CONTINUITY CHECKS USING THE CABLE WIRING DIAGRAMS FROM SECTION IV.

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

REPAIR PARTS AND SPECIAL TOOLS LIST INTRODUCTION

Scope.   This Repair Parts and Special Tools List (RPSTL) lists and authorizes spares and repair parts; special tools; special Test, Measurement and Diagnostic Equipment (TMDE); and other special support equipment required for the performance of unit maintenance of Computer Set, Digital AN/UYK-128 (V)1 & (V)2. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the Source, Maintenance and Recoverability (SMR) codes.

Repair Parts.   A listing of repair parts is located in each applicable WP and Technical Bulletin (TB) for the platform in need of repair.

Tools.   The applicable tools with the National Stock Number (NSN) for unit level repair are located in the following:

Tool Kit Description NSN

Electronic Equipment, TK-101/G NSN5180-00-064-5178

TMDE

TMDE Description NSN

Multimeter AN/PSM-45A (DVM) NSN6625-01-265-6000

McMaster Carr Multipurpose wire stripper/crimper,P/N 7007K92 (For making ground straps).

General.   In addition to Introduction, this Repair Parts and Special Tools List is divided into the following sections:

1. Repair Parts List. A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence. Bulk material are listed by item name in FIG. BULK at the end of the section. Repair part kits are listed separately in their own functional group within the Repair Parts List. Repair parts for repairable special tools are also listed in this section.
2. Special Tools List. Not applicable.
3. Cross - Reference indexes. A list, in National Item Identification Number (NIIN) sequence, of all National Stock Numbered (NSN) appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance.

Explanation Of Columns.

1. ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.
2. SMR CODE (Column (2)). The Source, Maintenance, and Recoverability (SMR) code is a five-position code containing supply/requisition information, maintenance category authorization criteria and disposition instruction, as shown in the following breakout.

NOTE

Complete Repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" function in ause/user environment in order to restore serviceability to a failed item.

(1) Source Code.   The source code tells you how to get an item needed for maintenance, repair or overhaul of an end item/equipment. Explanations of source codes follows:

Table 1. Source Code

Source Code	Application/Explanation
PA PB PC PD PE PF PG	Stocked items: use the applicable NSN to request/requisition items with these source codes. They are authorized to the level indicated by the code entered in the 3d position of the SMR code. Note: Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied.
Source Code	Application/Explanation
MO - (Made at org/AVUM Level) MF - (Made at DS/AVUM Level) MH - (Made at GS Level) ML - (Made at Specialized Repair Act (SRA)) MD - Made at Depot	Items with these codes are not to be requested/ requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list. If the item is authorized to you by the 3d position code of the SMR code, but the source code indicates it is made at a higher level, order the item from the higher level of maintenance.
AO - (Assembled by org/AVUM Level) AF - (Assembled by DS/AVUM Level) AH - (Assembled by GS Category) AL - (Assembled by SRA) AD - (Assembled by Depot)	Items with these codes are not to be requested/ requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the category of maintenance indicated by the source code. If the third position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance.
XA	Do not requisition an "XA" coded item. Order its next higher assembly.
XB	If an "XB" item is not available from salvage, order it using the CAGEC and part number given.
XC	Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.
XD	Item is not stocked. Order an "XD" - coded item through normal supply channels using the CAGEC and part number given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be used as source of supply for items with the above source codes, except for those source coded "XA" or those aircraft support items restricted by requirements of AR 750-1.

(2) Maintenance Code. Maintenance codes tell you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(3) Maintenance Code. The maintenance code entered in the third position tells you the lowest maintenance category authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following categories of maintenance.

Table 2. Maintenance Code -3RD

Maintenance Code - 3rd	Application/Explanation
C	Crew or operator maintenance done within organization or aviation maintenance.
O	Unit or aviation unit category can remove, replace, and use the item.
F	Direct support or aviation intermediate category can remove, replace, and use the item.
H	General support category can remove, replace, and use the item.
L	Specialized repair activity can remove, replace, and use the item.
D	Depot category can remove, replace, and use the item.

Some limited repair may be done on the item at a lower category of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

(4) Maintenance Code.   The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions.) This position will contain one of the following maintenance codes.

Table 3. Maintenance Code - 4TH

Maintenance Code - 4 th	Application/Explanation
O	Unit or aviation unit is the lowest category that can do complete repair of the item
F	Direct support or aviation intermediate category is the lowest level that can do complete repair of the item.
H	General support is the lowest category that can do complete repair of the item.
L	Specialized repair activity (designate the specialized repair activity) is the lowest category that can do complete repair of the item.
D	Depot is the lowest category that can do complete repair of the item.
Z	Non-repairable. No repair is authorized.
B	No repair is authorized. (No parts or special tools are assigned for the maintenance of a -B- coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user category.

(3) Recoverability Code.   Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

Table 4. Recoverability Code

Recoverability Code	Application/Explanation
Z	Non-repairable item. When unserviceable, condemn and dispose of the item at the category of maintenance shown in the third position of SMR code.
O	Reparable item. When uneconomically reparable, condemn and dispose of the item at unit or aviation unit category.
F	Reparable item. When uneconomically reparable, condemn and dispose of the item at direct support or aviation intermediate category.
H	Reparable item. When uneconomically reparable, condemn and dispose of the item at general support category.

Table 4. Recoverability Code–Continued

Recoverability Code	Application/Explanation
D	Reparable item. When beyond lower category repair capability, return to depot. Condemnation and disposal of item not authorized below depot category.
L	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

NSN (Column (3)).   The NSN for the item is listed in this column.

CAGEC (Column (4)).   The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor or Government agency, etc., that supplies the item.

PART NUMBER (Column (5)).   Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

Explanation Of Columns (Section II and III).

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the part number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The Federal item name and, when required, a minimum description to identify the item.
2. The physical security classification of the item is indicated by the parenthetical entry (insert applicable physical security classification abbreviation, e.g., Phy Sec C1 (C) - Confidential, Phy Sec C1 (S) - Secret, Phy Sec C1 (T) - Top Secret).
3. Items that are included in kits and sets are listed below the name of the kit or set.
4. Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.
5. Part numbers for bulk materials are referenced in this column in the line entry for the item to be manufactured/fabricated.
6. Hardness Critical Item (HCI). A support item that provides the equipment with special protection from Electro-Magnetic Pulse (EMP) damage during a nuclear attack.
7. When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line of the description (before UOC).
8. Usable on code, when applicable.
9. In the Special Tools section, the Basis Of Issue (BOI) appears as the last line in the entry for each special tool, special TMDE, and other special support equipment. When density of equipment supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.
10. The statement "END OF FIGURE" appears just below the last item description in Column (6) for a given figure in both section II and section III.

QTY (Column (7).   Indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, sub-functional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

EXPLANATION OF COLUMNS

National Stock Number (NSN) Index.

(1) Stock Number Column.   This column lists the NSN by National Item Identification Number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN (i.e.,). When using this column to locate an item, ignore the first four digits of the NSN. When requisitioning items use the complete NSN (13 digits) sequence.

(2) FIG. Column. This column lists the number of the figure where the item is identified/located. The illustrations are in numerical sequence in sections II and III.

(3) ITEM Column. This item number identifies the item associated with the figure listed in the adjacent Fig. Column. This item is also identified by the NSN listed on the same line.

(4) PART NUMBER Column. This column indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

Part Number Index. Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or digit in like order).

(1) FIG. Column. This column lists the number of the figure where the item is identified/located in sections II and III.

(2) ITEM Column. The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

SPECIAL INFORMATION

Usable On Code. The usable on code appears in the lower left corner of the Description column heading. Usable On Code are shown as "UOC" in the Description Column (justified left) on the first line following applicable item description/nomenclature. Uncoded items are applicable to all models identification of the Usable On Codes in the RPSTL are:

Table 5. Usable On Code

Code	Used On		Code	Used On
31G	AN/UYK-128(V1)		32H	M992 FAASV
31H	AN/UYK-128(V2)		32J	M985/978/1074/1075 HEMTT/PLS
31U	M981 FIST-V		32K	M997 HMMWV Ambulance
31V	M577 Medical		32L	M548A3 Volcano
31W	M577 Mortar		32M	M1064 Mortar
31X	M1070 (HET)		32N	M35A3 2.5 Ton Cargo
31Y	M1068 Brigade		32P	M1031 CUCV
31Z	M1037/1097 Rigid Wall Shelter		32Q	M923 5 Ton Cargo
32A	M1068 SICPS Battalion		32R	M93 Fox
32B	M1068 FDCV		32S	M9 ACE
32C	M934 Van, Expando		32T	M998/M1026/M1038 HMMWV
32D	SICPS Tent		32U	M1096A6 Paladin
32E	M113 APC Common		32V	Avenger
32F	M60 AVLB/M		32W	Q36
32G	M881 Hercules		32X	DEUCE

Fabrication Instructions. Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. NSN (or part number if no NSN is assigned) for bulk materials is also referenced in the description column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in TM 11-7010-326-20&P.

Index Numbers.　　Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in Section II.

Associated Publications.　　The publications listed below pertain to The Computer Set, Digital AN/UYK-128 (V)1 & (V)2 and the installation kits:

Table 6. Associated Publications

Publication	Short Title
TM 11-7010-326-10	Operator's Manual for Computer Set, Digital AN/UYK-128 (V)1 & (V)2.
TM 11-7010-326-20 and P	Unit Maintenance Manual for Computer Set, Digital AN/UYK-128 (V)1 & (V)2.
TB 11 7010-326-20	Unit Maintenance Technical Bulletin for Computer Set, Digital AN/UYK-128 (V)1 & (V)2 Installation Kits.
TM 11-7010-326-30&P	Direct Support Maintenance Manual for Computer Set, Digital AN/UYK-128 (V)1 & (V)2.

Illustrations - Listing.　　Only illustrations containing unit level authorized items from these manuals appear in this RPSTL. Only those parts coded "C"or "O" in the third position of the SMR code are listed in the tabular listing; therefore, there may be a break in the item number sequence, figure number and page number. Only illustrations containing crew or unit level authorized items appear in this RPSTL.

How to Locate Repair Parts.　　When National Stock Number Or Part Number Is Not Known.

1.　First. Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.
2.　Second. Find the figure covering the assembly group or subassembly group to which the item belongs.
3.　Third. Identify the end item on the figure and use the Figure and Item Number Index to find the NSN.
4.　Fourth. Look in the Repair Parts and Special Tools List work packages (work package for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

When NSN Is Known.

1.　First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.
2.　Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

When P/N Is Known.

1.　First. If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index work package. Identify the figure and item number.
2.　Second. Look up the item on the figure in the applicable repair parts list work package.
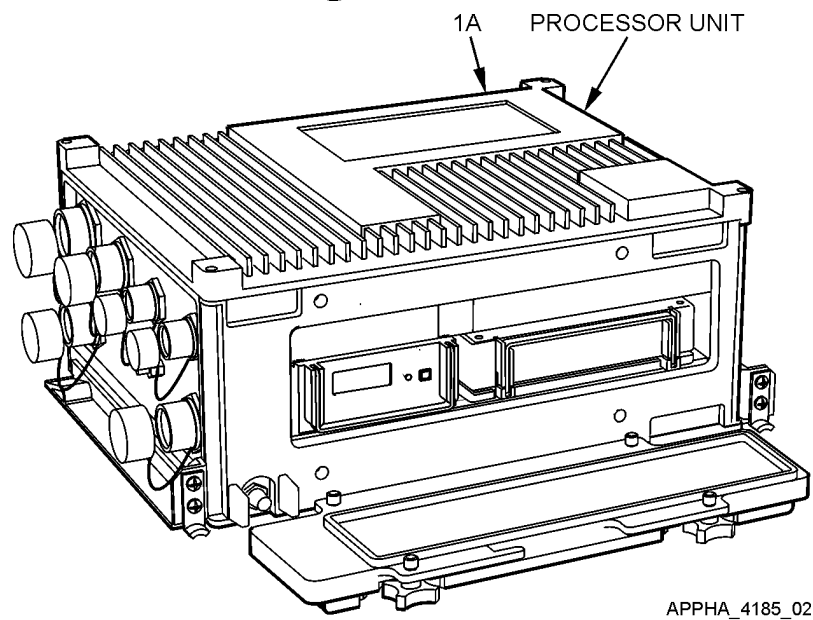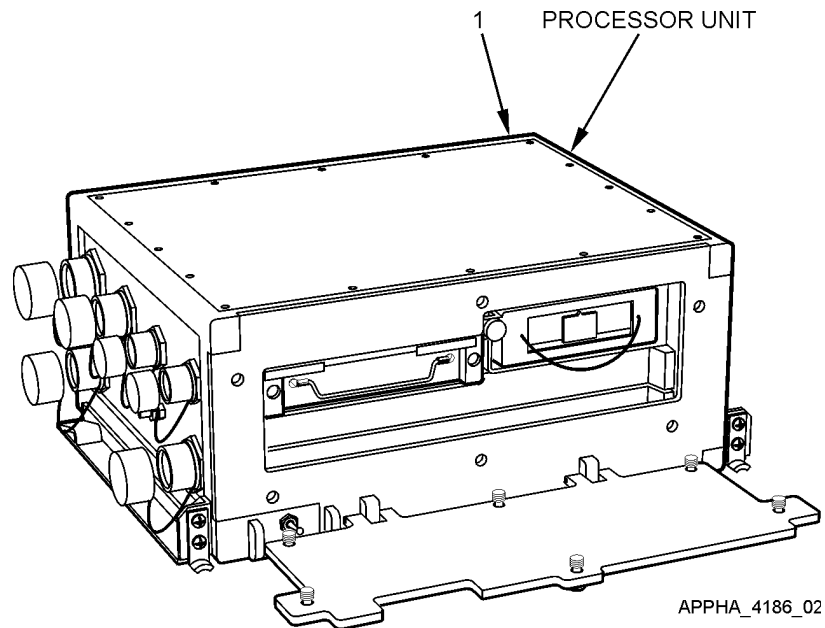
Abbreviations:

Table 7. Abbreviations

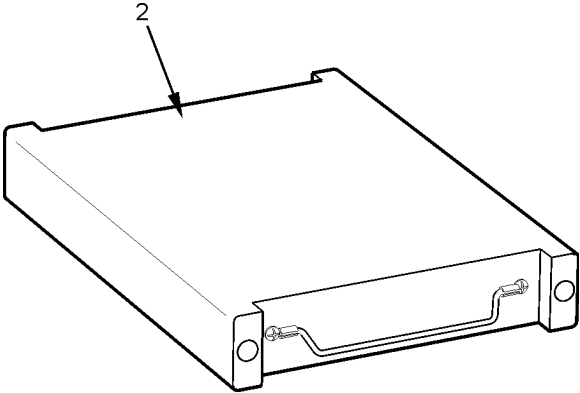| Abbreviations	Explanation
DU	Display Unit
KU	Keyboard Unit
PU	Processor Unit
RHDDC	Removable Hard Disk Drive Cartridge

END OF WORK PACKAGE

UNIT MAINTENANCE

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
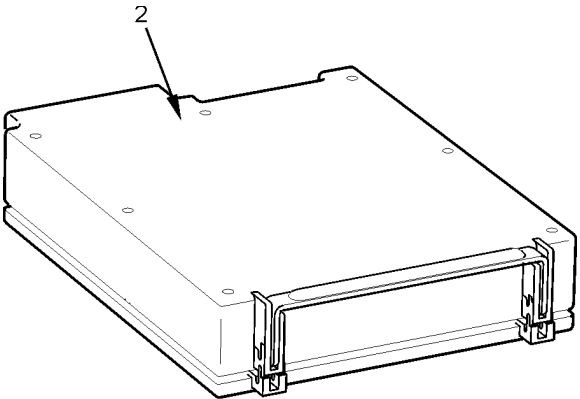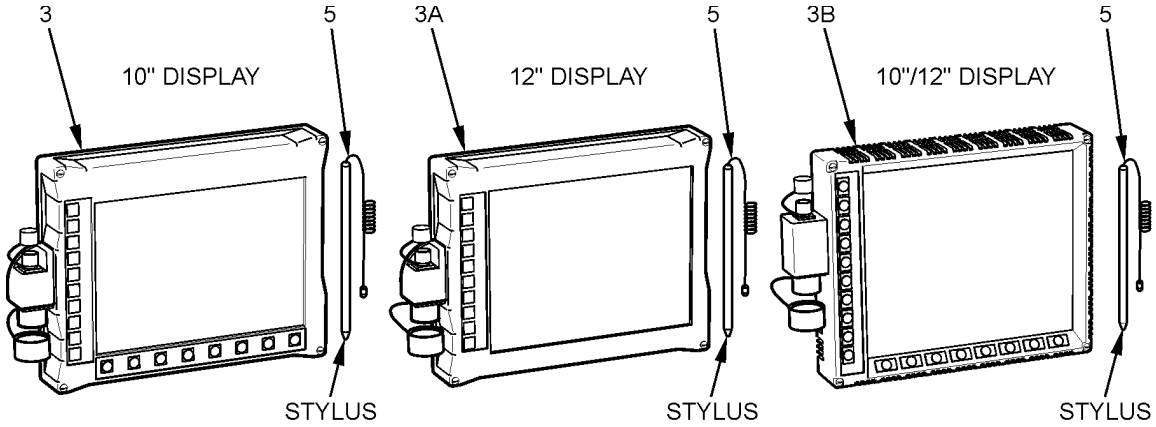### NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA

REPAIR PARTS LIST

1   PROCESSOR UNIT

APPHA_4186_02

1A   PROCESSOR UNIT

APPHA_4185_02

2

RHDDC NSN 7025-01-474-5753

APPBA_4009_01

2

RHDDC NSN-7025-01-474-3789

APPBA_4010_01

3	5	3A	5	3B	5

10" DISPLAY   12" DISPLAY   10"/12" DISPLAY

STYLUS   STYLUS   STYLUS
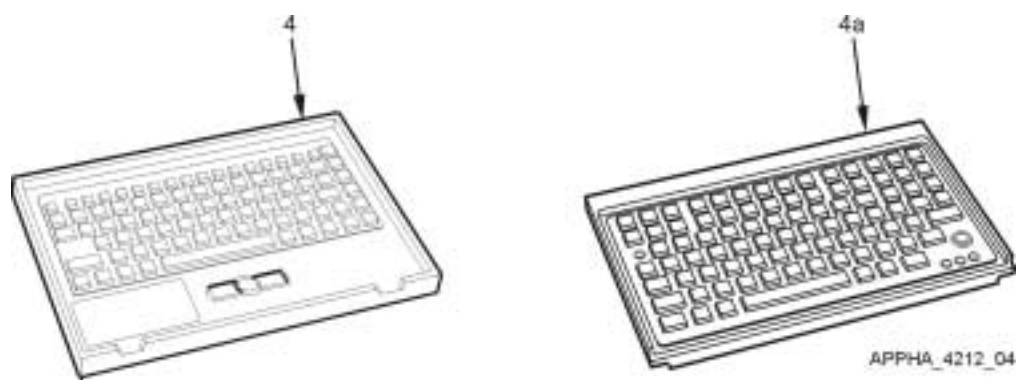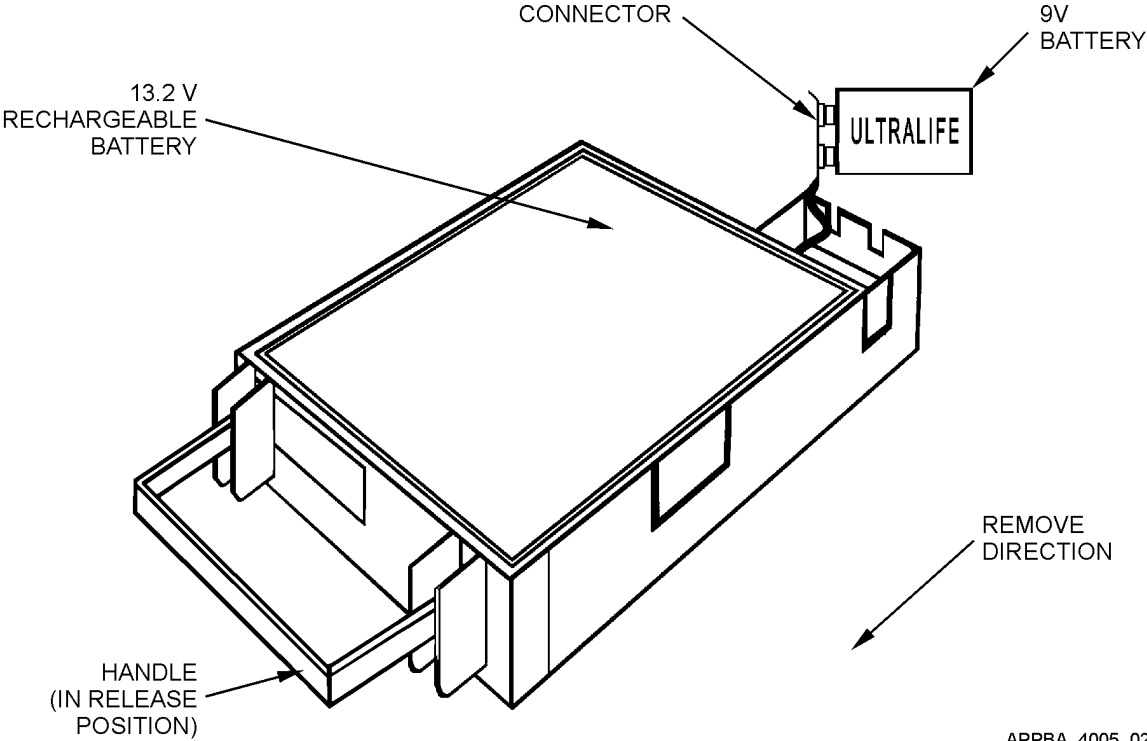
APPHA_4079_04

Figure 1.   **Group 00 Computer Set, Digital – AN/UYK-128(V)1 & (V) 2**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE(UOC)	(7) QTY
					GROUP GROUP 00 COM-PUTER SET, DIGITAL	
1	PAODD	7021-01-475-0217	0J198	881291-1	COMPUTER, DIGITAL (PROCESSOR UNIT (PU))(NOTE: CAN NOT BE USED WITH 7025-01-474-3789 DISK DRIVE UNIT) 1	
1A	PAODD	7021-01-474-3793	0J198	881292-1	COMPUTER, DIGITAL (PROCESSOR UNIT (PU))(NOTE: CAN NOT BE USED WITH 7025-01-474-5753 DISK DRIVE UNIT) 1	
2	PAODD	7025-01-474-5753	0J198	881296-1	DISK DRIVE UNIT REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (NOTE: NOT INTERCHANGEABLE WITH 7025-01-474-3789) 1	
2A	PAODD	7025-01-474-3789	0J198	881297-1	DISK DRIVE UNIT REMOVABLE HARD DISK DRIVE CARTRIDGE (RHDDC) (NOTE: NOT INTERCHANGEABLE WITH 7025-01-474-5753 DISK DRIVE UNIT) 1	
3	PAODD	7025-01-475-0229	0J198	881293-1	DISPLAY UNIT (DU) 10" (NOTE: THIS DISPLAY IS USED IN THE AN/UYK-128 (V)1 ONLY) UOC:31G 1	
3A	PAODD	7025-01-475-0282	0J198	881294-1	DISPLAY UNIT (DU) 12.1" (NOTE: THIS DISPLAY IS USED IN THE AN/UYK-128 (V)2 ONLY) UOC:31H 1	
3B	PAODD	7025-01-475-0280	0J198	881299-1	DISPLAY UNIT (DU) (NOTE: THIS DISPLAY IS USED FOR BOTH (V)1 & (V)2 CONFIGURATIONS) UOC:31G, 31H 1	
4	PAODD	7025-01-474-3791	0J198	881295-1	KEYBOARD DATA ENTRY (KEYBOARD UNIT (KU) 1	

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE(UOC)	(7) QTY
4A	PAODD	7025-01-474-3792	0J198	881298-1	KEYBOARD DATA ENTRY (KEYBOARD UNIT (KU)) 1	
5	PAOZZ	7520-01-484-1219	08YX1	59848-1	STYLUS 1	

END OF FIGURE

END OF WORK PACKAGE

UNIT MAINTENANCE

FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA

REPAIR PARTS LIST

APPBA_4003_02

CONNECTOR

9V
BATTERY

13.2 V
RECHARGEABLE
BATTERY

ULTRALIFE

REMOVE
DIRECTION

HANDLE
(IN RELEASE
POSITION)

APPBA_4005_02

Figure 1.   **Group 0101 Battery Assemblies**

(1) ITEM NO.	(2) SMR CODE	(3) NSN	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODE(UOC)	(7) QTY
					GROUP GROUP 0101 BAT- TERY AS- SEMBLIES	
6	PAODD		0J198	59755-1	BATTERY BOX - REMOVABLE (NOTE: NOT INTERCHANGEABLE WITH PU 7021-01-474-3793)UOC: 31U THROUGH 32V	
					1	
6A	PAODD		0J198	0410-06558-0000	BATTERY TRAY- REMOVABLE (NOTE: NOT INTERCHANGEABLE WITH PU 7021-01-475-0217) UOC: 31U THROUGH 32V	
					1	
					END OF FIGURE	

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

PART NUMBER LIST

EFFECTIVE NOTICE: NOT APPLICABLE

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
7025-01-474-3789	WP0020 Figure 1	2A	7025-01-475-0229	WP0020 Figure 1	3
7025-01-474-3791	WP0020 Figure 1	4	7025-01-475-0280	WP0020 Figure 1	3B
7025-01-474-3792	WP0020 Figure 1	4A	7025-01-475-0282	WP0020 Figure 1	3A
7021-01-474-3793	WP0020 Figure 1	1A	7520-01-484-1219	WP0020 Figure 1	5
7025-01-474-5753	WP0020 Figure 1	2			
7021-01-475-0217	WP0020 Figure 1	1			

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

PART NUMBER INDEX

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
881297-1, –2	WP0020 Figure 1	2A	881299-1, –2	WP0020 Figure 1	3B
881295-1, –2, –3	WP0020 Figure 1	4	881294-1, –2	WP0020 Figure 1	3A
881298-1	WP0020 Figure 1	4A	59848-1	WP0020 Figure 1	5
881292-1, –2	WP0020 Figure 1	1A	59755-1	WP0021 Figure 1	6
881296-1	WP0020 Figure 1	2	0410-06558-0000	WP0021 Figure 1	6A
881291-1, –3	WP0020 Figure 1	1			
881293-1, –2	WP0020 Figure 1	3			

END OF WORK PACKAGE

UNIT MAINTENANCE

**FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)**

**NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA**

EXPENDABLE AND DURABLE ITEMS LIST

INTRODUCTION

Scope. This listing is for information purposes only. It does not give the authority to requisition the listed items below.

Explanation Of Columns. The following paragraphs define the columns of Section II.

Column (1)-Item Number. This number is assigned to the entry in the listing.
Column (2)-Level. This column identifies the lowest level of maintenance for the listed item.
   C - Operator/Crew
   O - Unit Maintenance
Column (3)-National Stock Number. This is the National Stock Number assigned to the item: use it to request and requisition the item.
Column (4)-Description. Indicates the Federal Item name. The line for each item indicates the part number.
Column (5)-Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

Table 1. Expendable and Durable Items List

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION, CAGE, PART NUMBER	(5) U/M
1	C	7920-00-205-1711	, Rag, Wiping, Cotton and Cotton Synthetic (81348) DDD-R-30, Grade B (58536) A-A-531	
			()	LB
2	C	5975-01-274-0220	, Mounting Base, Tiedown, Electrical	
			()	LB
3	C	5975-01-265-6900	, Strap, Tiedown, Electrical Components	
			()	LB

END OF WORK PACKAGE

UNIT MAINTENANCE
FORCE XXI BATTLE COMMAND BRIGADE-AND-BELOW
(FBCB2) (VERSION 3.5.4 DRAFT)
COMPUTER SET, DIGITAL AN/UYK-128(V)

NSN 7010-01-475-5277 AN/UYK-128(V)1
NSN 7010-01-475-5275 AN/UYK-128(V)2, EIC NA

PLATFORM CABLESEXPENDABLE AND DURABLE ITEMS LIST

SCOPE.   This work package provides the cable connectors/layout and cable wiring diagrams noted in Table 1 Cable-To-Platform Matrix for this manual.

Table 1 is a Cable-To-Platform Matrix. To locate the correct assembly and wiring diagrams for each cable, find the applicable platform in the platform column (vertical) then the cable type (horizontal). At the intersection will be the part numbers (P/N) for the Assembly and Wiring. The figures containing the Assembly and Wiring diagrams are listed by their appropriate P/N. Connected to the signal connector of the PU (J3) is the Serial Interface Adapter Device (SIAD) [P/N 881331-1]. This allows up to five serial port connections. The cables with letters following the W3 (usually N and P) go between the SIAD and the affected device.

Platforms with unusual cables are listed directly under the name of the platform. For interconnection diagrams, hardware part numbers and additional hardware information, refer to the applicable appendix (APP.) column for the platform in TB 11-7010-326-20. Table 1 specifies cable assembly and cable wiring diagrams.

Table 2. Cable-To-Platform Matrix

APP.	PLATFORM	CABLE W1	CABLE W2	CABLE W3N	CABLE W3P	CABLE W4
A	M109A6 Paladin [Also] CABLE W1AFigure 19 Length -1 CABLE W3E Figure 17 Length -1	Figure 51 Length -1	Figure 5 Length -2	Figure 9 Length -1	N/A	Figure 13 Length -4
B	M1064 Mortar	Figure 3 Length -7	Figure 5 Length -4	Figure 9 Length -4	Figure 11 Length -4	Figure 13 Length -3
C	M981 FIST-V	Figure 15 Length -2	Figure 5 Length -2	Figure 9 Length -2	Figure 11 Length -2	Figure 13 Length -1
D	M9 ACE DOZER	Figure 3 Length -6	Figure 5 Length -1	Figure 9 Length -2	Figure 11 Length -3	Figure 13 Length -2
E	M60 AVLB/M	Figure 3 Length -2	Figure 5 Length -2	Figure 9 Length -1	Figure 11 Length -3	Figure 13 Length -2
F	M548A3 Volcano	Figure 3 Length -9	Figure 5 Length –1	Figure 9 Length -4	Figure 11 Length -3	Figure 13 Length -3
G	M577 (FDC) MORTAR	Figure 15 Length -1	Figure 5 Length -2	Figure 9 Length -1	Figure 11 Length -2	Figure 13 Length -4
H	M577 MED	Figure 15 Length -2	Figure 5 Length -2	Figure 9 Length -4	Figure 11 Length -4	Figure 13 Length -2
I	M113 Common	Figure 3 Length -8	Figure 5 Length -2	Figure 9 Length -4	Figure 11 Length -2	Figure 13 Length -2

Table 2. Cable-To-Platform Matrix–Continued

APP	PLATFORM	CABLE W1	CABLE W2	CABLE W3N	CABLE W3P	CABLE W4
J	M113 APC Common	Figure 3 Length -8	Figure 5 Length -2	Figure 9 Length -4	Figure 11 Length -2	Figure 13 Length -2
K	M88A1 HERCULES	Figure 3 Length -5	Figure 5 Length -3	Figure 9 Length -2	Figure 11 Length -4	Figure 13 Length -1
L	M998/M1026/M1038 HMMWV With IN-TEGRATED RACK	Figure 1 Length -3	Figure 5 Length -1	Figure 9 Length -1	Figure 11 Length -1	N/A
M	M997 HMMWV Amb.	Figure 1 Length -1	Figure 5 Length -2	Figure 9 Length -3	Figure 11 Length -3	N/A
N	M93A1 Fox [NBC] CABLE W3M -881333-1	Figure 3 Length -1	Figure 5 Length -4	Figure 9 Length -3	N/A	Figure 13 Length -3
O	M998 Avenger CABLEFigure 35	Figure 33	Figure 5 Length -2	Figure 37	Figure 39	Figure 49 Length -1
P	M1031 Shop Van CUCV	Figure 3 Length -4	Figure 5 Length -3	Figure 9 Length -1	Figure 11 Length -3	N/A
Q	M985/978/1074/5 HEMTT/PLS	Figure 1 Length -1	Figure 5 Length -4	Figure 9 Length -2	Figure 11 Length -2	N/A
R	M923 5 Ton	Figure 41 Length -1	Figure 5 Length -1	Figure 9 Length -2	Figure 11 Length -2	N/A
S	M1037/1097 RWS	Figure 21 Length -1	Figure 5 Length -2	Figure 9 Length -3	Figure 11 Length -3	N/A
T	M992 FAASV	Figure 1 Length -2	(2) Figure 5 Length -3	Figure 9 Length -4	Figure 11 Length -4	Figure 13 Length -1
U	M1068 BR (Only)	Figure 3 Length -1	Figure 5 Length -1	Figure 9 Length -1	Figure 11 Length -3	881271-1 (MESHNET)
V	M1068 SICPS	Figure 3 Length -1	Figure 5 Length -1	Figure 9 Length -1	Figure 11 Length -3	Figure 13 Length -1
W	M1068 FDCV	Figure 3 Length -1	Figure 5 Length -1	Figure 9 Length -1	Figure 11 Length -3	Figure 13 Length -1
X	M934 VAN (Expando)	Figure 3 Length -3	Figure 5 Length -1	Figure 9 Length -4	Figure 11 Length -4	N/A
Y	M35 $2\frac{1}{2}$ Ton (Cargo Carrier)	Figure 1 Length -2	Figure 5 Length -1	Figure 9 Length -3	Figure 11 Length -2	N/A
Z	M58	Figure 1 Length -3	Figure 5 Length -2	Figure 9 Length -3	Figure 11 Length -2	Figure 13 Length -4
AA	M 1070 Heavy Equipment Transport (HET)	Figure 3 Length -8	Figure 5 Length -4	Figure 9 Length -3	Figure 11 Length -3	N/A

Table 2. Cable-To-Platform Matrix–Continued

APP	PLATFORM	CABLE W1	CABLE W2	CABLE W3N	CABLE W3P	CABLE W4
AB	SICPS Tent CABLE W5 Figure 47 Length -1 CABLE W6Figure 45 Length -1	W1A – Figure 23 Length -1 W1B – Figure 25 Length -2 W1C – Figure 27 Length -1 W1D – Figure 29 Length -1 W1E –Figure 31 Length -1	Figure 5 Length -1	Figure 9 Length -4	Figure 11 Length -1	N/A
AC	M113TAC-P SIAD W3MFigure 43 Length –1	Figure 3 Length -8	Figure 5 Length -2	Figure 9 Length -4	Figure 11 Length -2	Figure 13 Length -2
AD	FMTV $2\frac{1}{2}$ Ton Truck CABLE W6 Figure 45 Length –2	Figure 3 Length -6	Figure 5 Length -4	Figure 9 Length -1	Figure 11 Length -1	N/A
AE	Q36 HMMWV CABLE W6Figure 45 Length –3	889520–1	Figure 5 Length -1	Figure 9 Length -5	Figure 11 Length -1	N/A
AF	DEUCE CABLE W6 Figure 45 Length –2	Figure 3 Length -6	Figure 5 Length -2	Figure 9 Length -1	Figure 11 Length -3	N/A
AG	M1114 Up-Amored HMMWV	Figure 1 Length -3	Figure 5 Length -1	Figure 9 Length -1	Figure 11 Length -2	N/A
AH	M1113 ECV HMMWV CABLE W3EP - 889514–1	Figure 1 Length -3	Figure 5 Length -1	Figure 9 Length -1	Figure 11 Length -1	N/A

W1P1 (MT-6352/VRC J2)   W1P2 (CPU J1)

P1

P2

J1

W1J1 (INTERFACE)   APPCA_4026_02
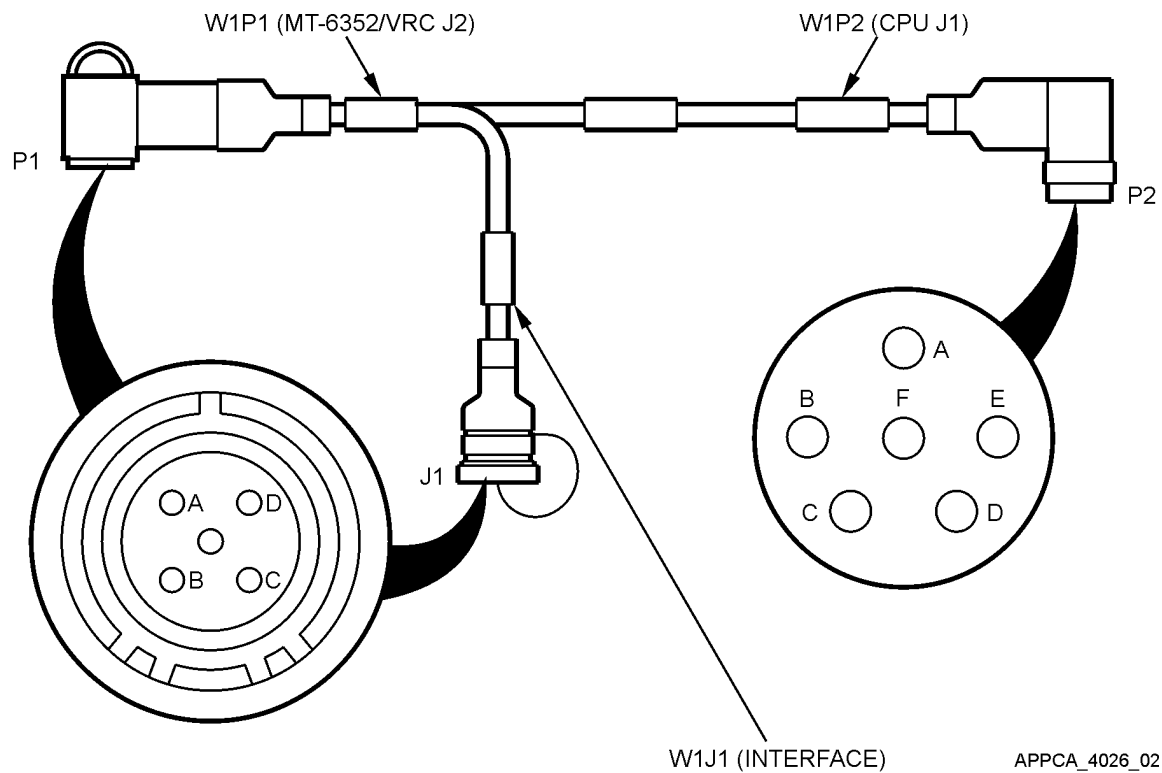
Figure 1 **P/N 866003 W1 Power Cable Assembly**

APPCA_4037_01
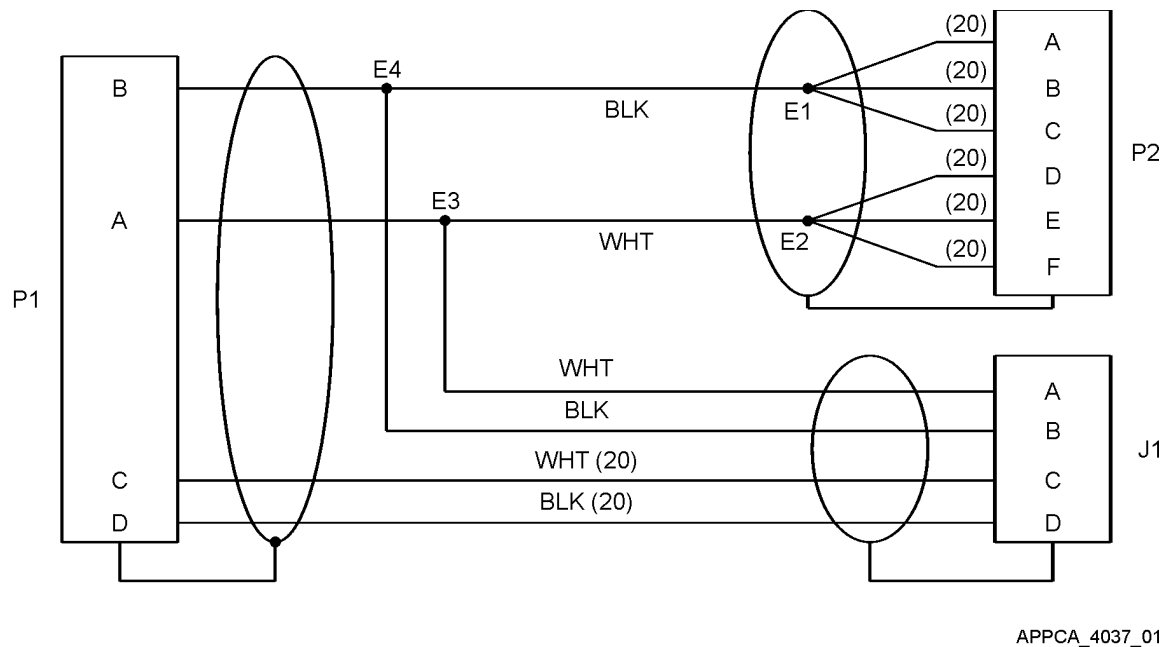
Figure 2 **P/N 866003 W1 Power Wiring Diagram**
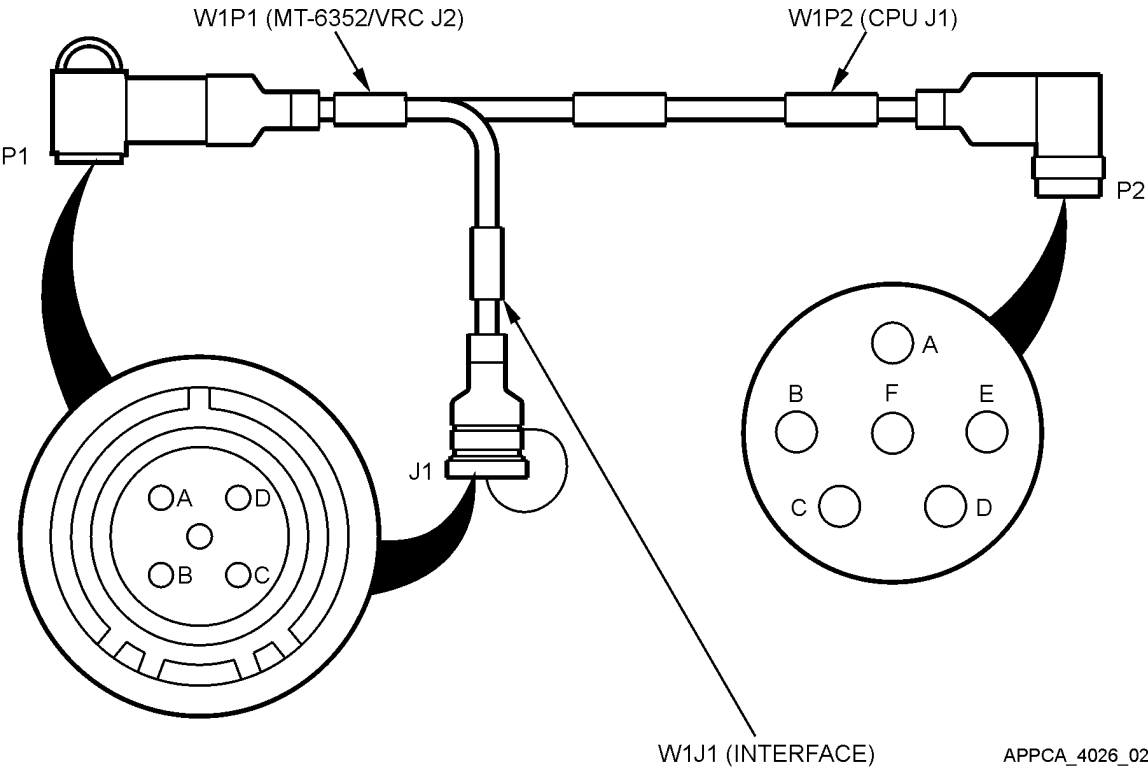
Figure 3 **P/N 861880 W1 Power Cable Assembly**
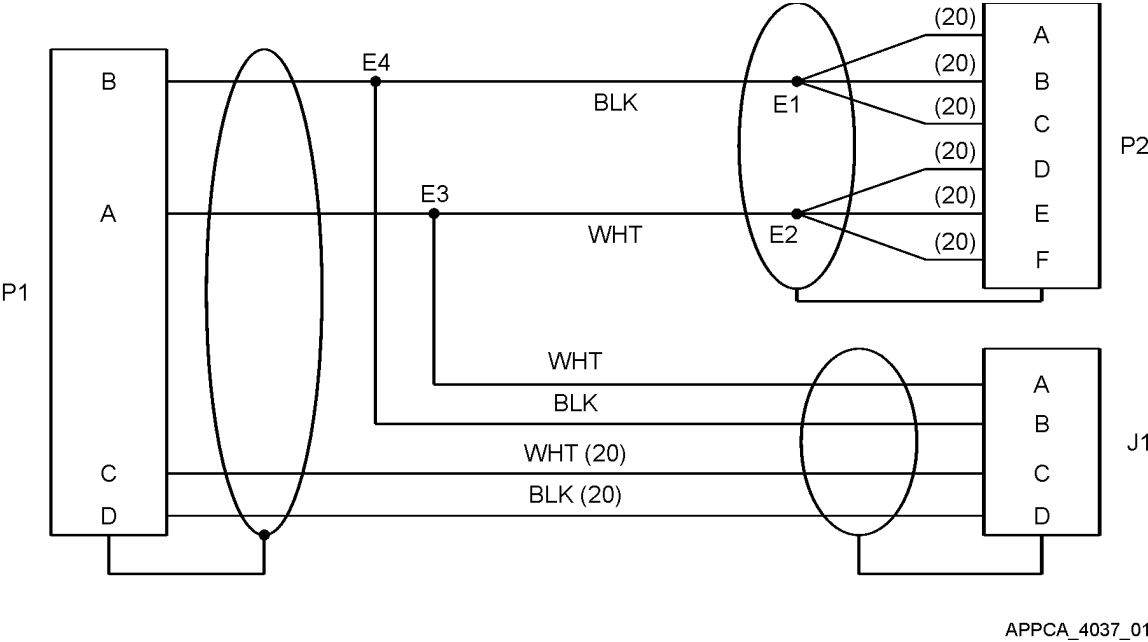
Figure 4 **P/N 861880 Power Wiring Diagram**

P1

W2P1 (CPU J4)

P2
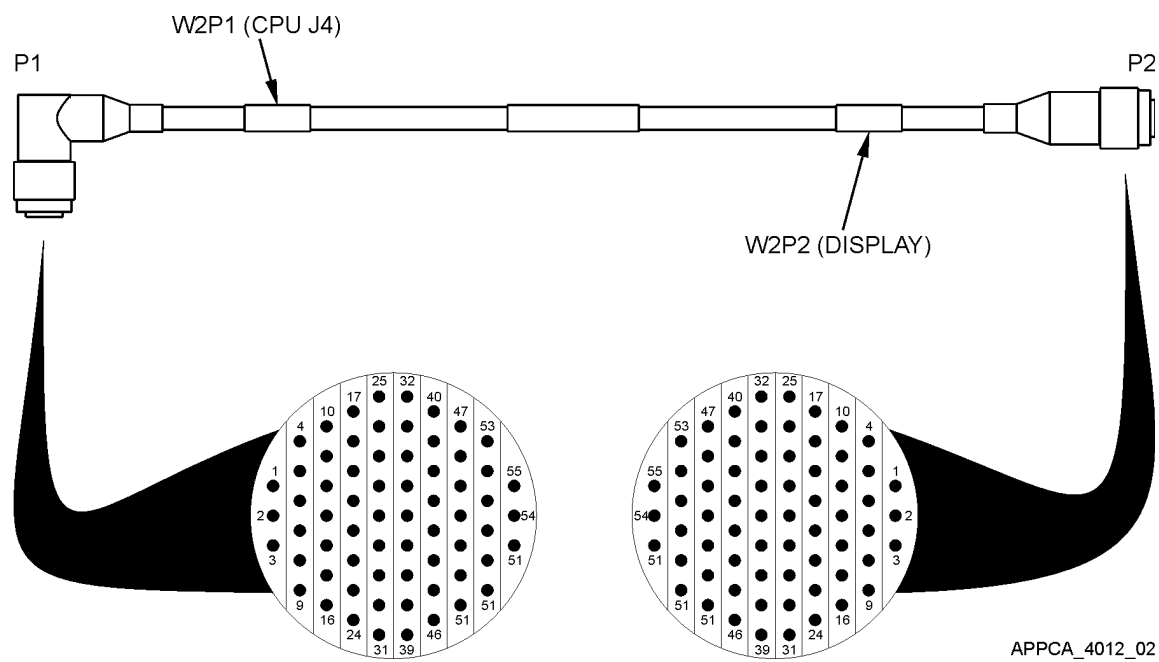
W2P2 (DISPLAY)

APPCA_4012_02

Figure 5   **P/N 881327 W2 Display Cable**
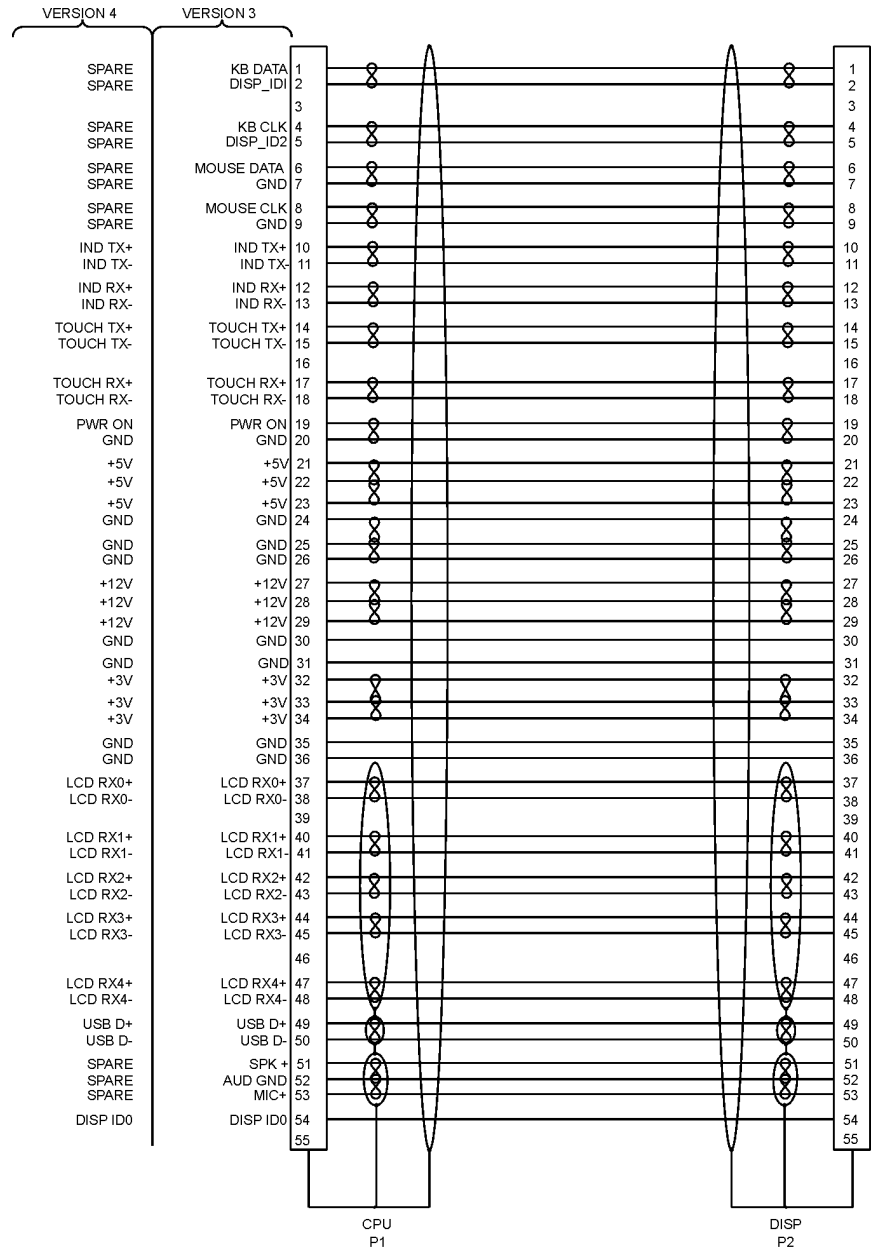
Figure 6 **P/N 881327 W2 Display Cable Wiring Diagram**
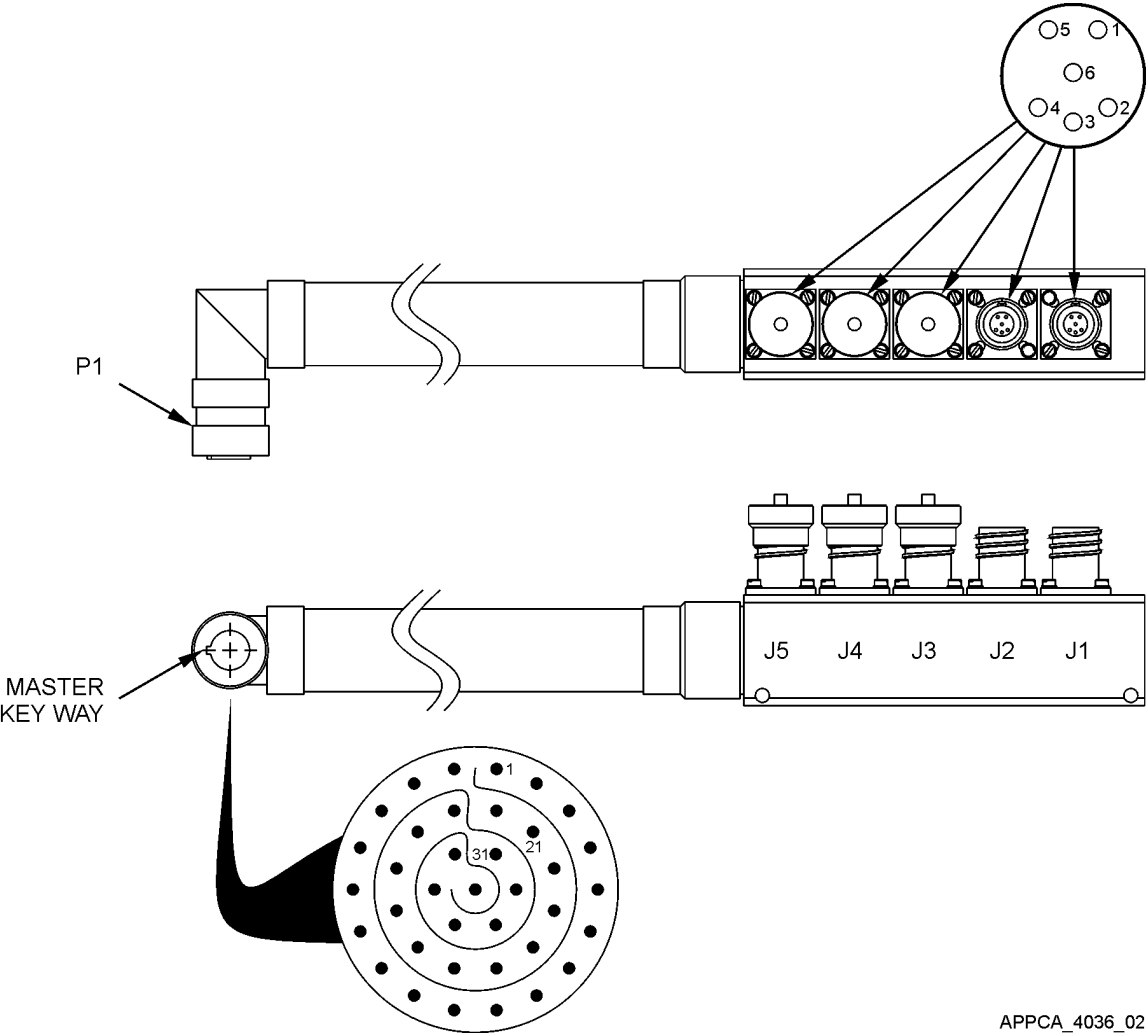
APPCA_4036_02

Figure 7   **P/N 881336 SIAD Cable Assembly**

P1

| 1 | 2 | 3 | | 4 | 5 | 6 | 21 | 22 | 32 | | 7 | 8 | 9 | 23 | 24 | 33 | | 10 | 11 | 12 | 25 | 26 | 34 | | 13 | 14 | 15 | 27 | 28 | 35 |

BLACK BROWN RED   BLACK BROWN RED ORANGE YELLOW GREEN   BLACK BROWN RED ORANGE YELLOW GREEN   BLACK BROWN RED ORANGE YELLOW GREEN   BLACK BROWN RED ORANGE YELLOW GREEN

| 1 | 2 | 3 | | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 2 | 3 | 4 | 5 | 6 |

J1   J2   J3   J4   J5
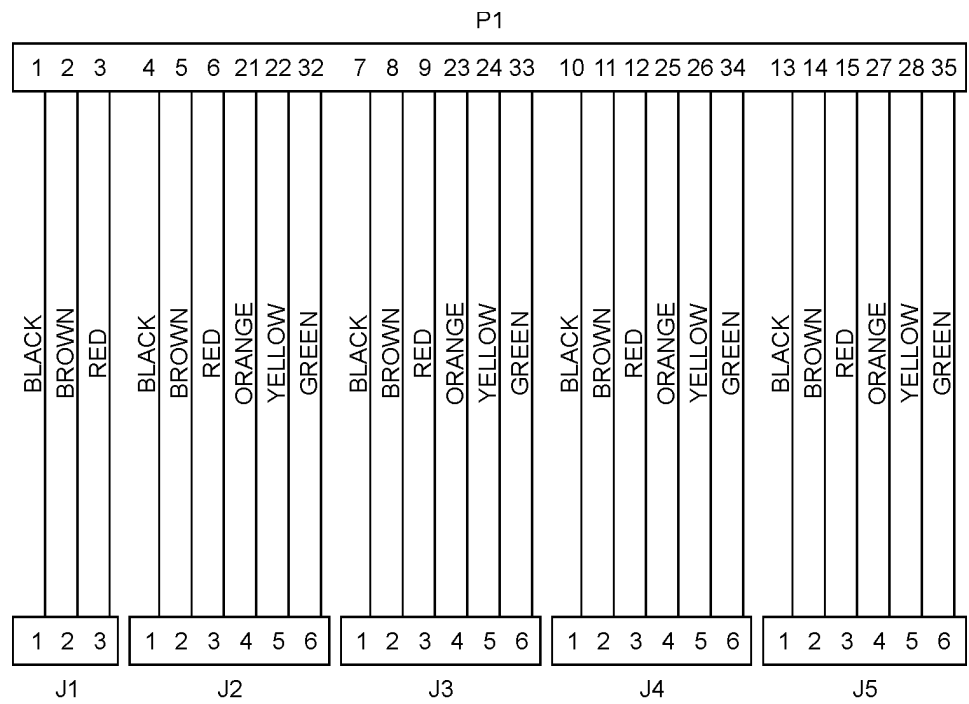
APPCA_4040_02

Figure 8   **P/N 881336 SIAD Wiring Diagram**

W3N-P1 (SIAD-J1)   W3N-P2 (INC-A2J6)

P1   P2
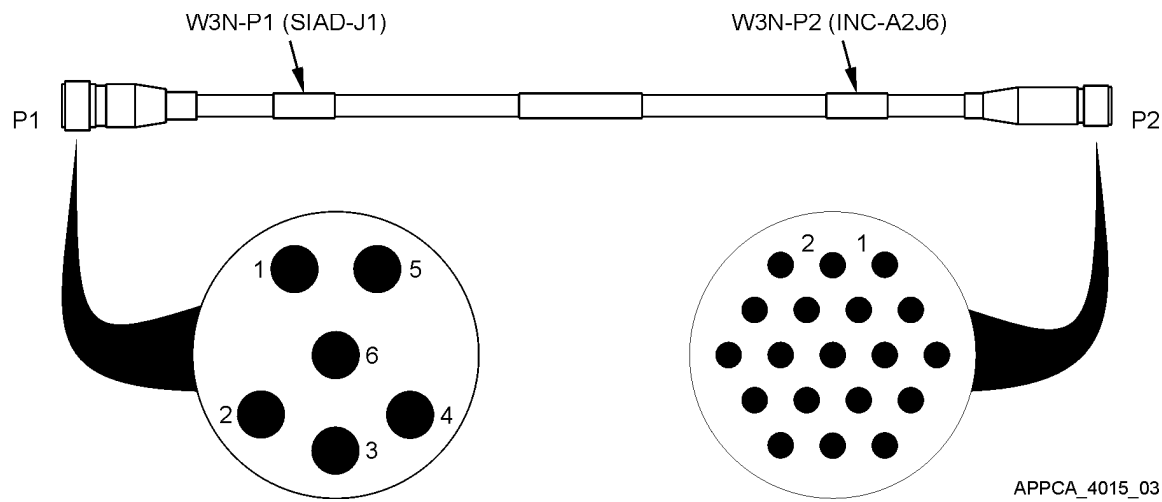
APPCA_4015_03

Figure 9   P/N 881336 W3N Cable Assembly

SIAD   INC

TX   1   18   RX
GND   2   7   SD
RX   3   17   GND

P1   P2

APPCA_4029_01
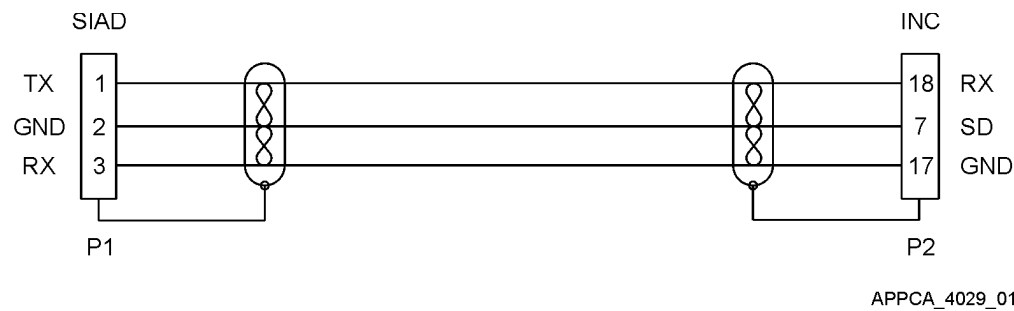
Figure 10   P/N 881336 W3N Wiring Diagram

W3P-P1 (SIAD-J2)   W3P-P2 (PLGR-J2)

P1   P2

1   5
6
2   4
3

5   1
10   15   11
6

APPCA_4084_02
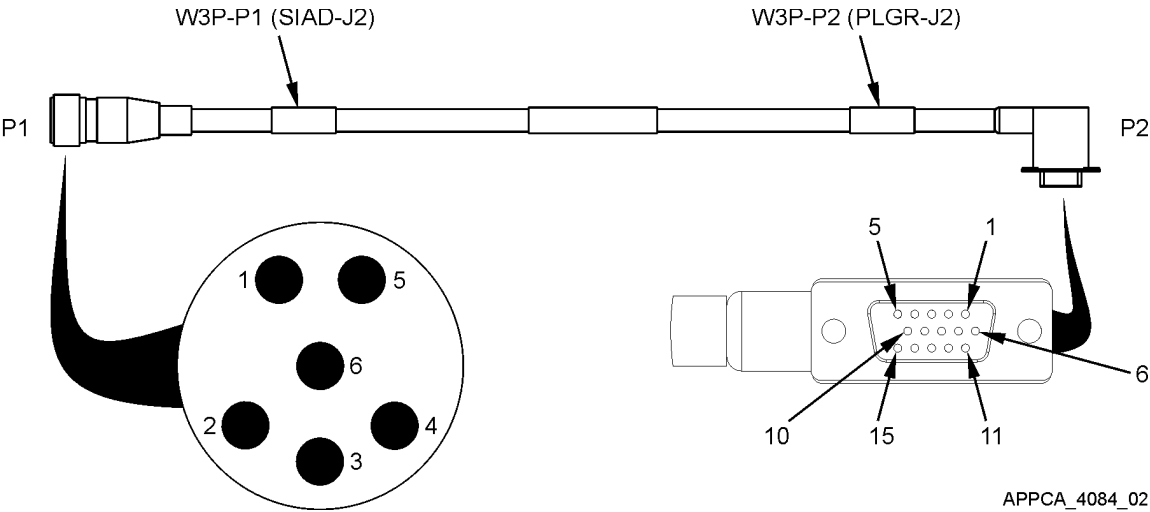
Figure 11   **P/N 881335 W3P Cable Assembly**

SIAD   PLGR

RXD-	6		4	422 OUT-
TXD-	4		9	422 IN-
TXD+	3		10	422 IN+
RXD+	5		5	422 OUT+
GND	2		3	GND
			13	SERIAL ENABLE

P1   P2

APPCA_4035_01
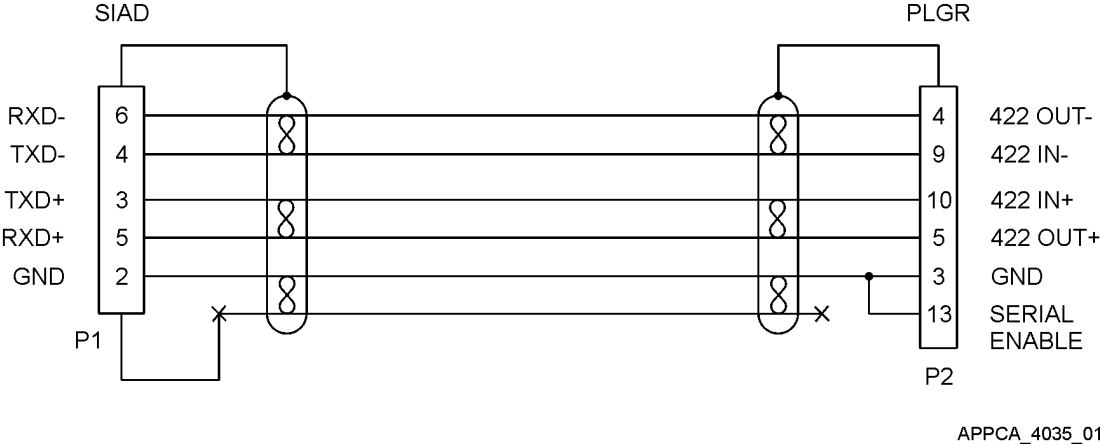
Figure 12   **P/N 881335 W3P Wiring Diagram**

W4P1 (CPUJ2)   W4P2 (C-2298)

P2

P1

1
2
11
10
3
12   13   9
4
5   6   7   8

J1

A
B   E
C
D

W4J1 (HEADSET P1)

APPCA_4025_01
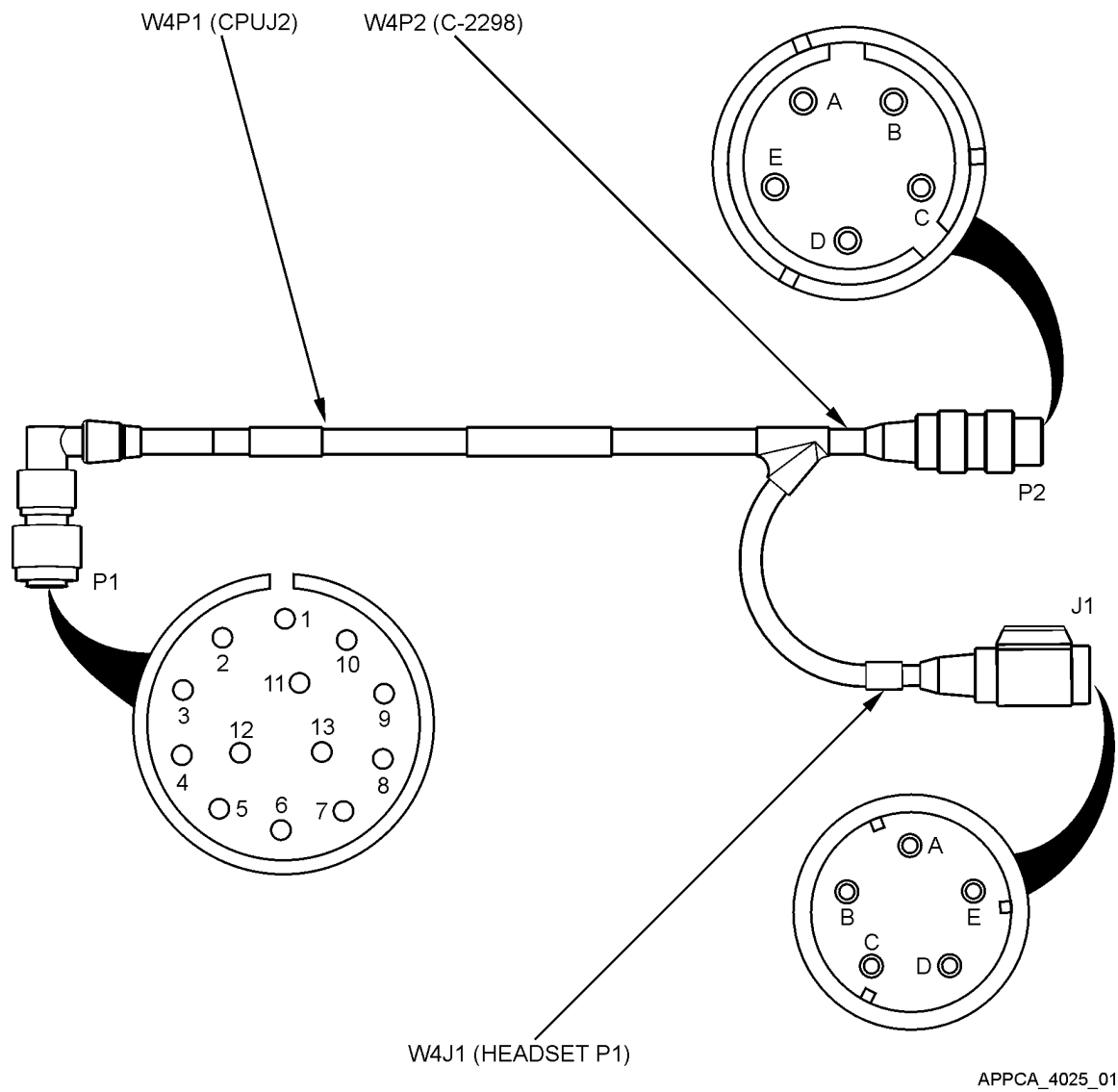
Figure 13   **P/N 881270 W4 Cable Assembly**
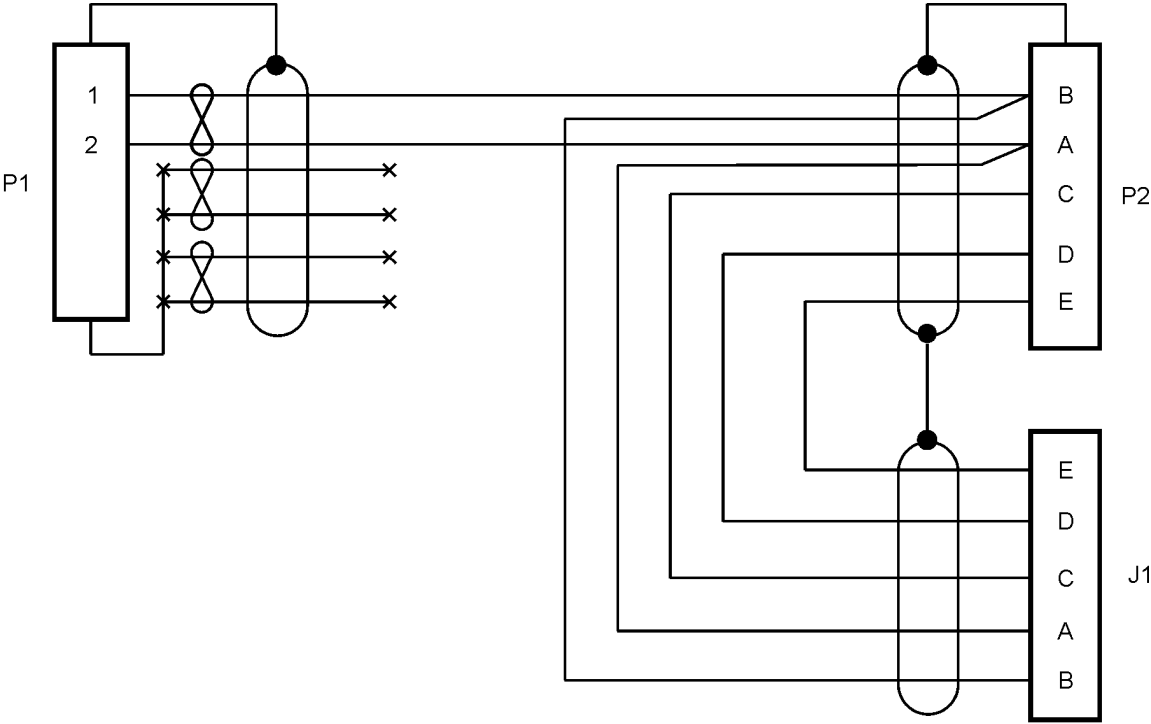
APPCA_4011_01

Figure 14   **P/N 881270 W4 Wiring Diagram**

W1P1 VEHICLE UTILTY JACK   W1P2 (CPU J1)

P1

P2

J1

W1J1 (INTERFACE)   APPCA_4009_02
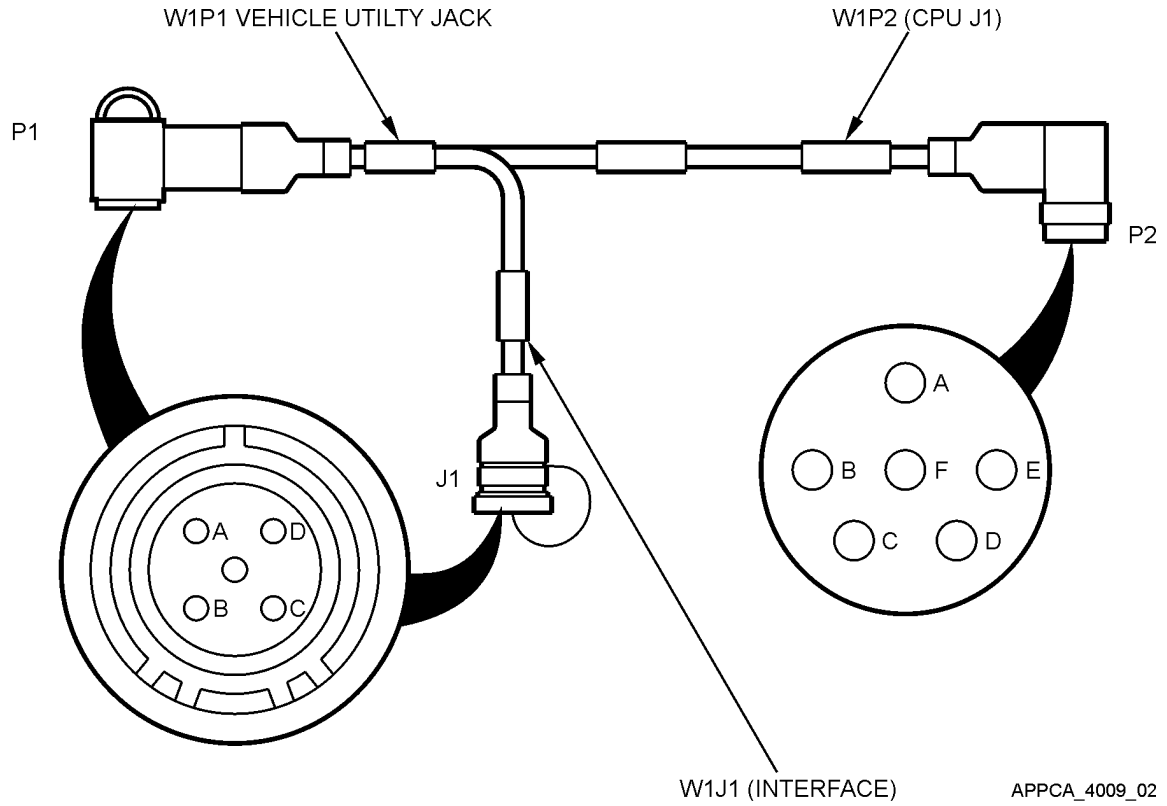
Figure 15   **P/N 861882 W1 Cable Assembly**

P1

A
C

B

J1

A

B

E3

E4

P2

(20)   A   +28V
(20)   B   +28V
(20)   C   +28V

(20)   D   28V RET
(20)   E   28V RET
(20)   F   28V RET

E1

E2

APPCA_4007_01
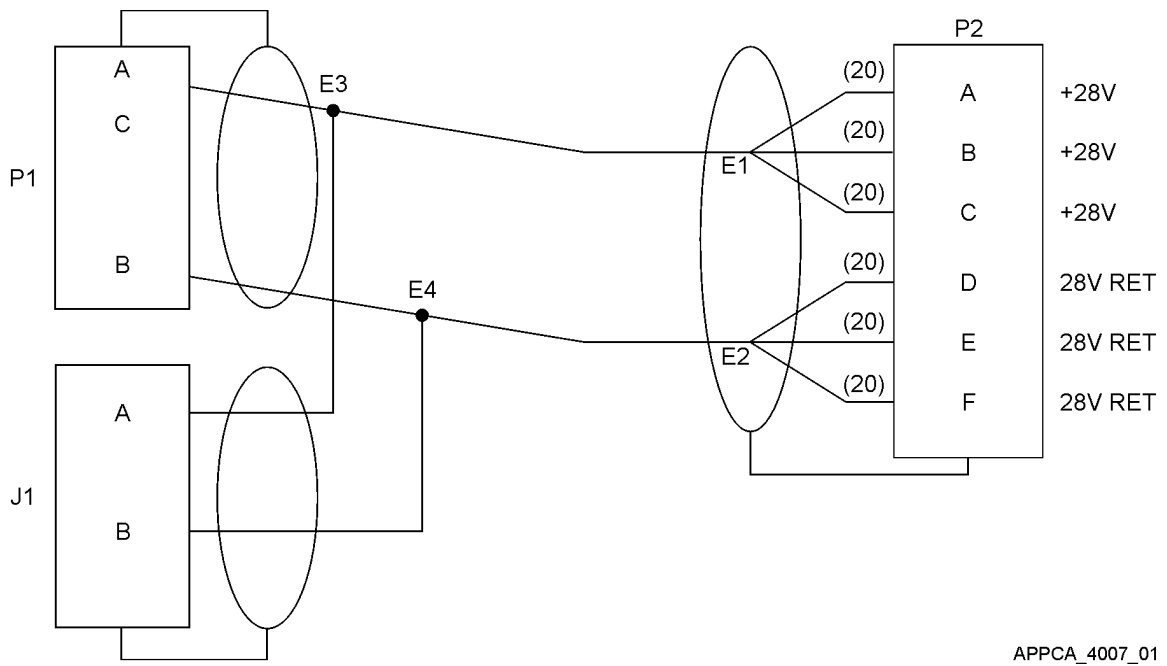
Figure 16   **P/N 861882 W1 Wiring Diagram**

W3E-P1 (SIAD-J4)   W3E-P2 (EDS KEYPAD-J2)

P1   P2

APPCA_4024_02
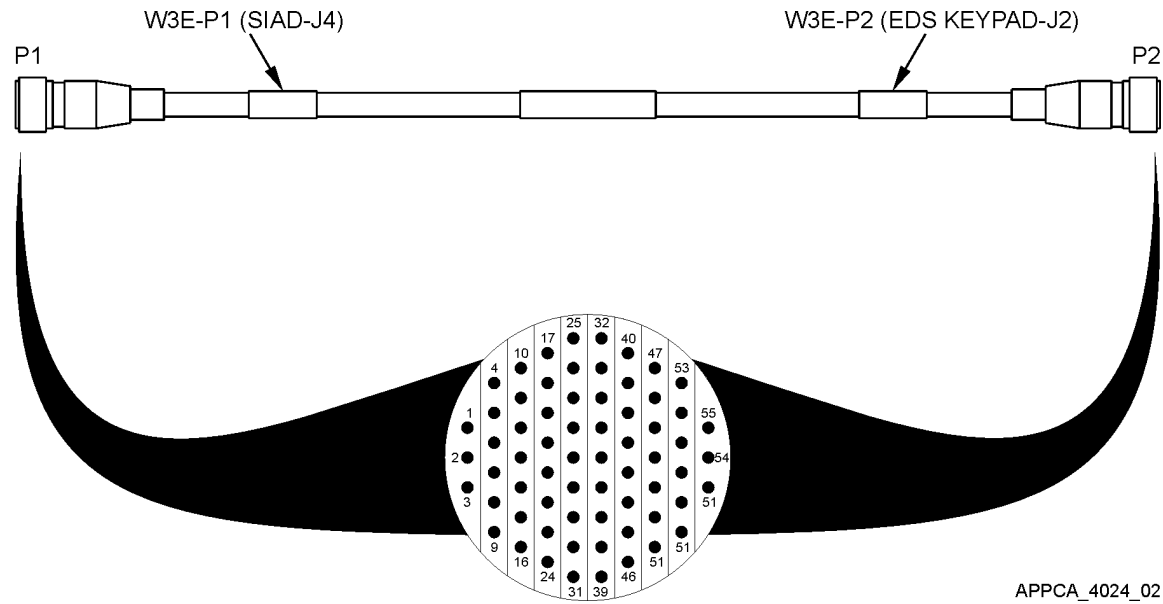
Figure 17   **P/N 881284 W3E Cable Assembly (PALADIN)**

SIAD   EDS KEY

SIAD				EDS KEY
423 TX	1		1	
GRD	2		2	GND
RXD+	5		3	TXD+
RXD-	6		4	TXD-
TXD+	3		5	RXD+
TXD-	4		6	RXD-
	P1		P2	

APPCA_4034_01
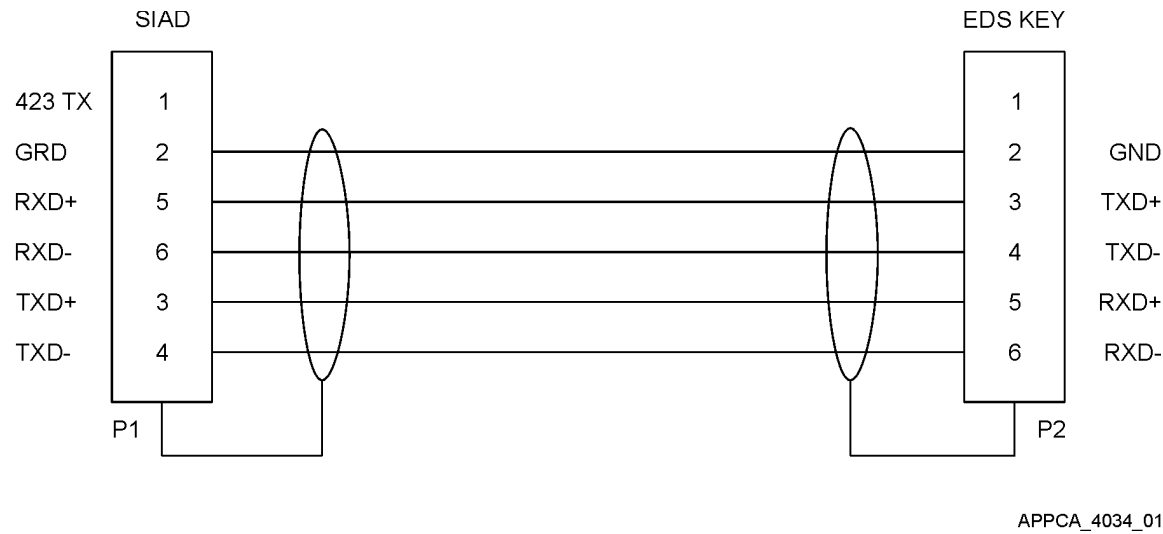
Figure 18   **P/N 881284 W3E Wiring Diagram**

W1AP1 (MT-6352/VRC J2)   (P1/J1SPA/J1PTU)

P1

P2

J1

W1AJ1 (TBD)

APPCA_4023_02
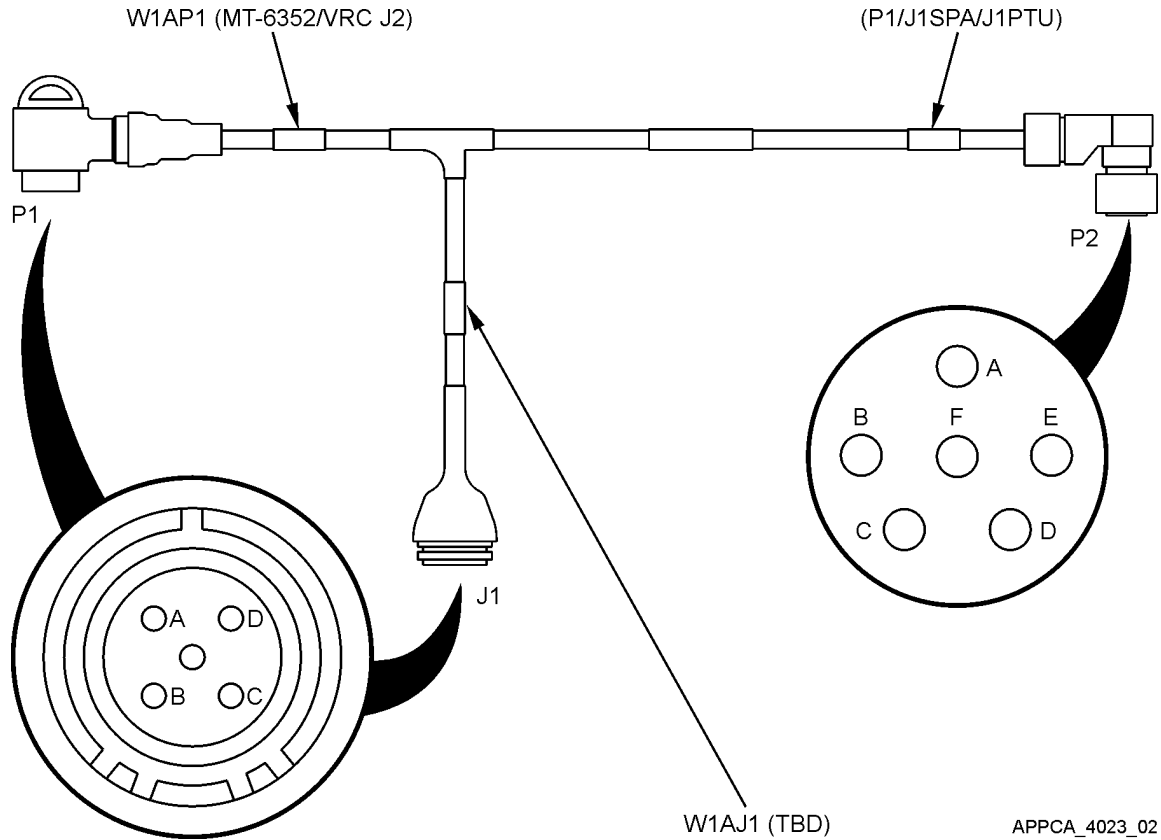
Figure 19   **P/N 881278 W1A Cable Assembly (PALADIN)**

APPCA_4033_01
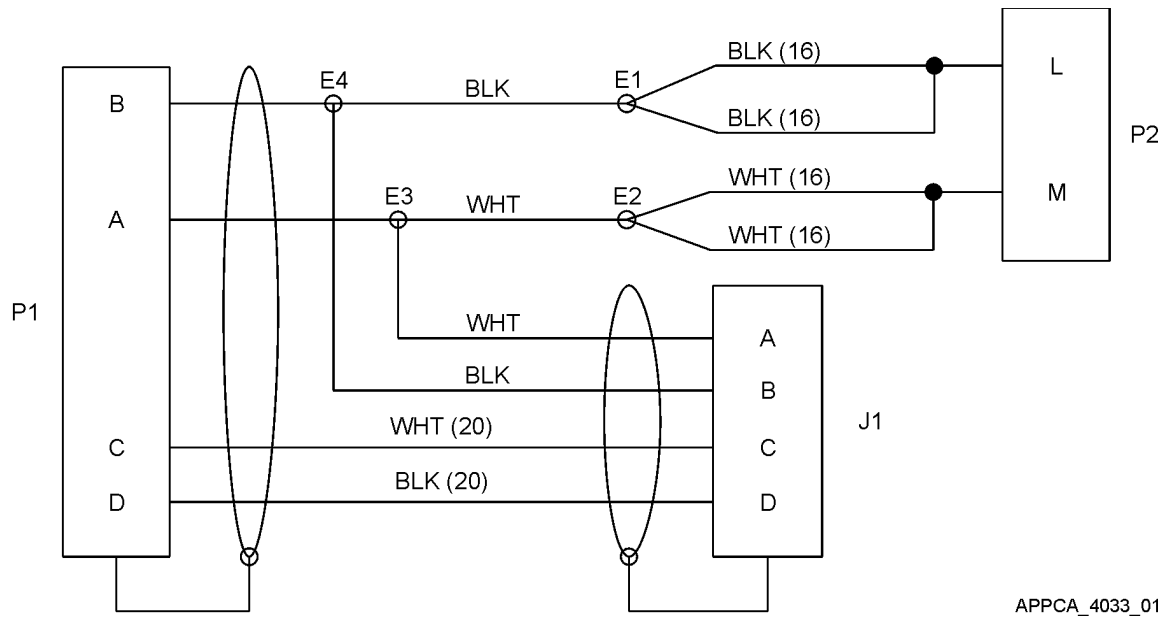
Figure 20   **P/N 881278 W1A Wiring Diagram (PALADIN)**

MT-6352/VRC A4J2   W1P2

(CPU J1)

P1   P2

APPCA_4010_01
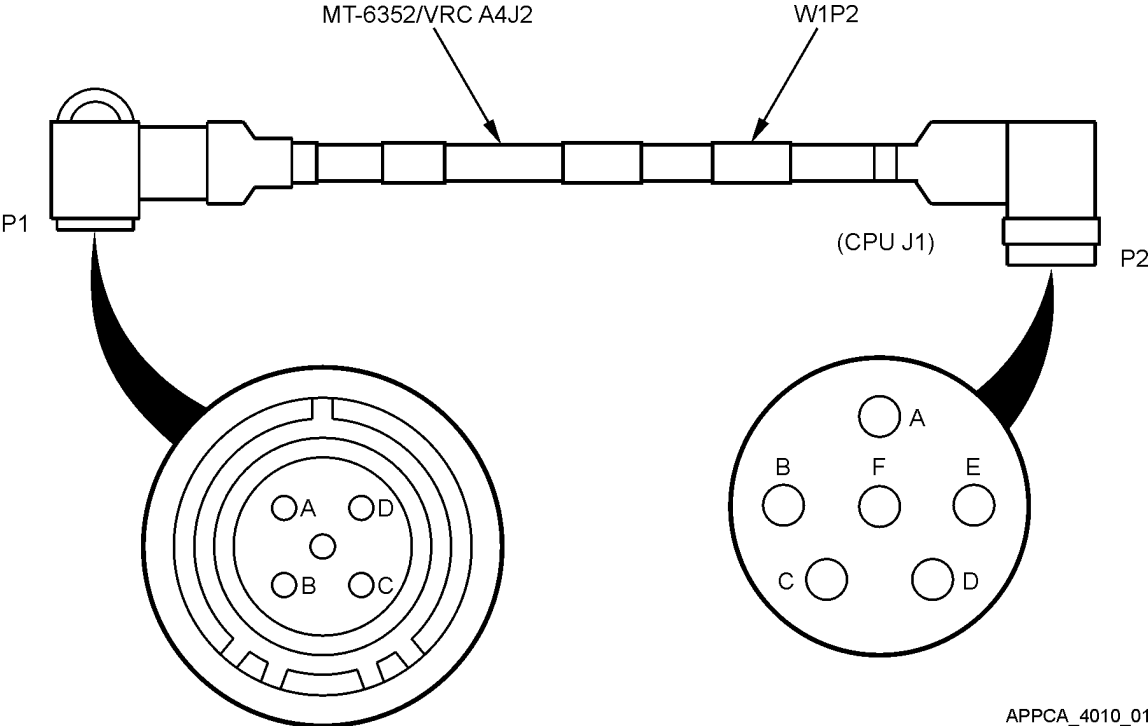
Figure 21   **P/N 861888 W1 Cable Assembly**

APPCA_4074_01
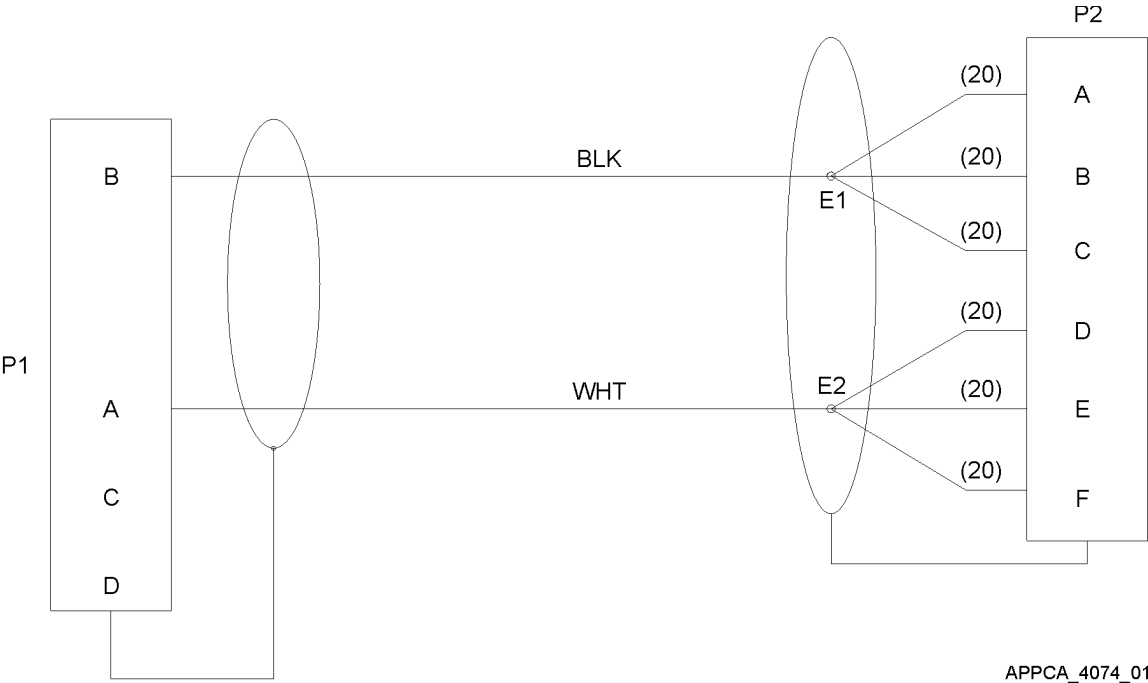
Figure 22   **P/N 861888 W1 Wiring Diagram**

W1A (28V)   W1AP2 (P/S J2)

P2

P1

A

B   D

A   D

C

B   C

APPCA_4018_03
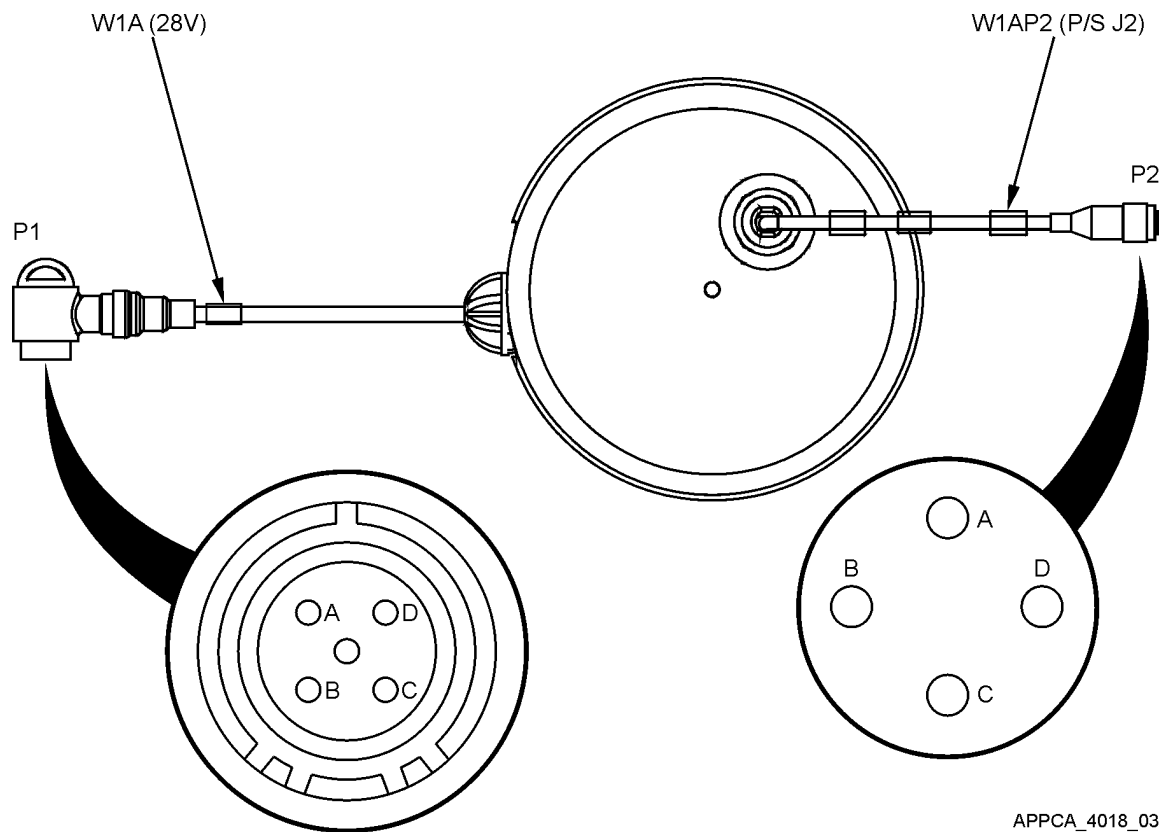
Figure 23 **P/N 881317 W1A Cable Assembly (SICPS TENT)**

P1   P2

B   BLACK   16AWG   E1   20AWG   A   +28V

+28V   20AWG   B   +28V

A   WHITE   16AWG   E2   20AWG   C   RTN

RTN   20AWG   D   RTN

GREEN   16AWG   E3   16AWG

APPCA_4078_01
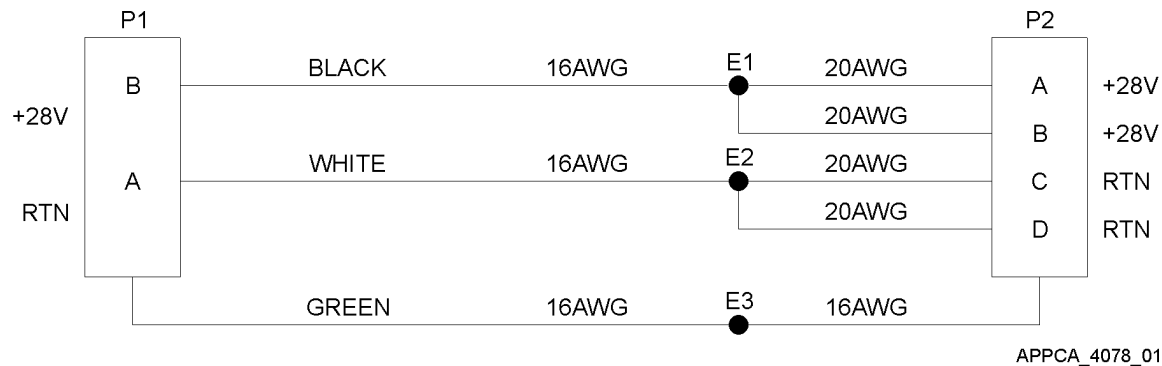
Figure 24 **P/N 881317 W1A Wiring Diagram**
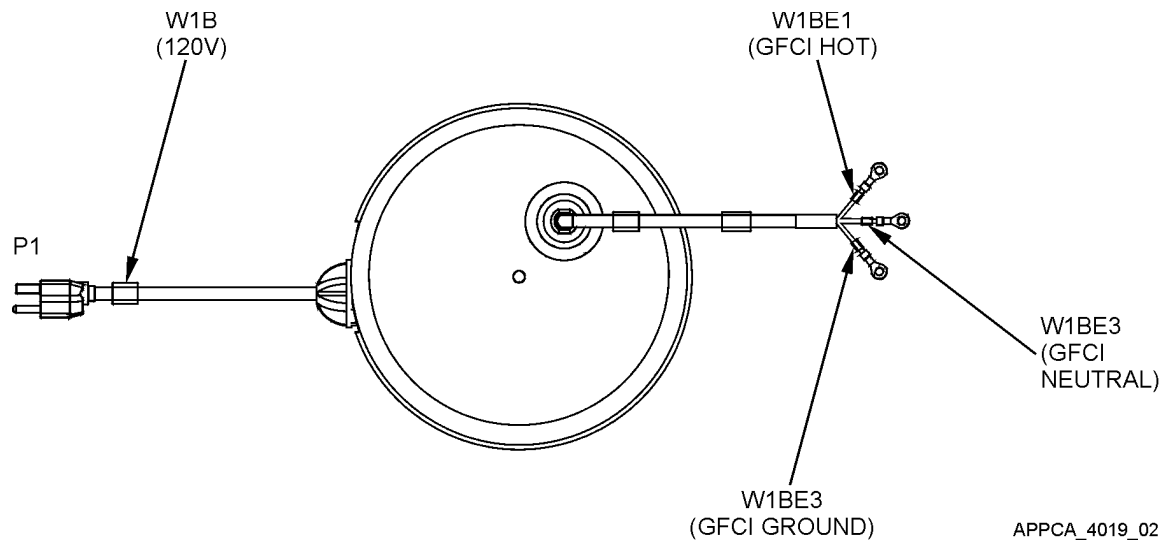
Figure 25   **P/N 881318 W1B Cable Assembly (SICPS TENT)**
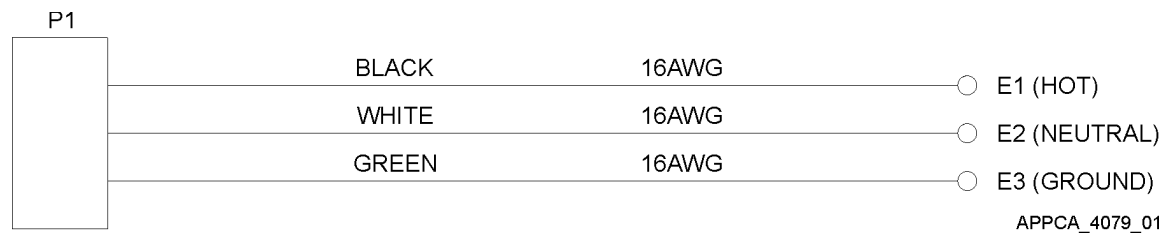
Figure 26   **P/N 881318 W1B Wiring Diagram**
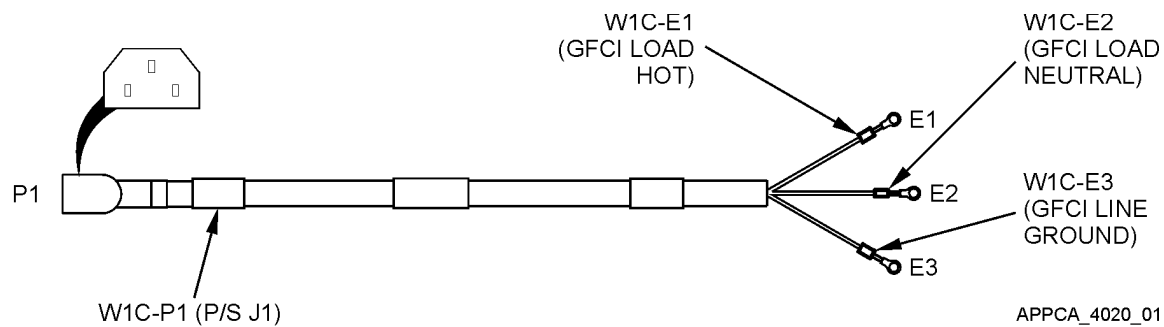
Figure 27 **P/N 881319 W1C Cable Assembly (SICPS TENT)**
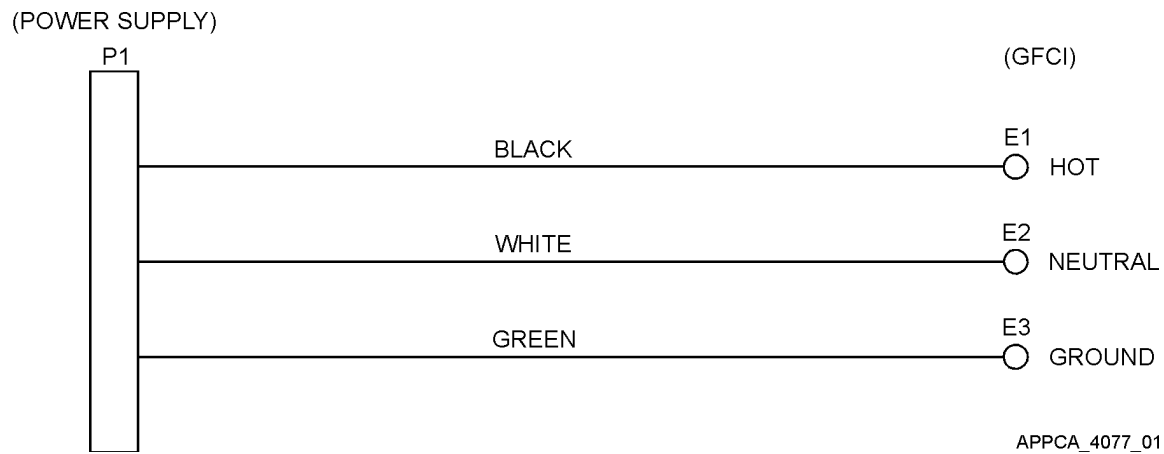
Figure 28 **P/N 881319 W1C Wiring Diagram (SICPS TENT)**

W1D-P1 (P/S-J3)   W1D-P2 (CPU-J1)

P1   P2

H● A● B●
G● I● J● C●
F● E● D●

A●
E●   B●
F●
D●   C●

APPCA_4021_03
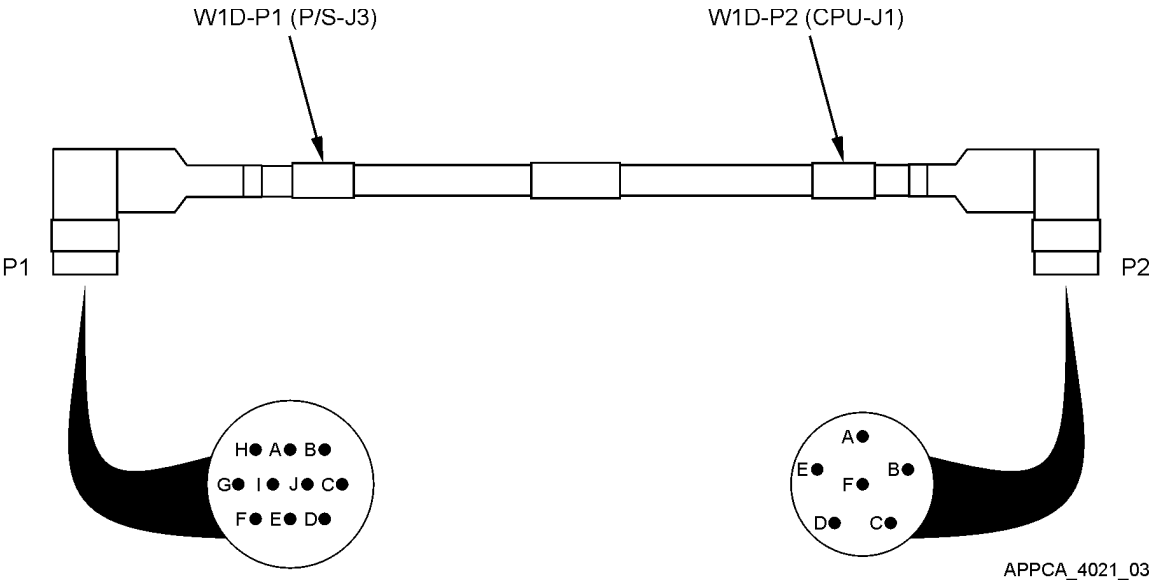
Figure 29   **P/N 881321 W1D Cable Assembly (SICPS TENT)**

POWER   E1   CPU
SUPPLY   P1   P2

+   A   RED   A   +
         D   RED   B
                                        BLK   C
                                        BLK   D
RTN   B   E   RTN
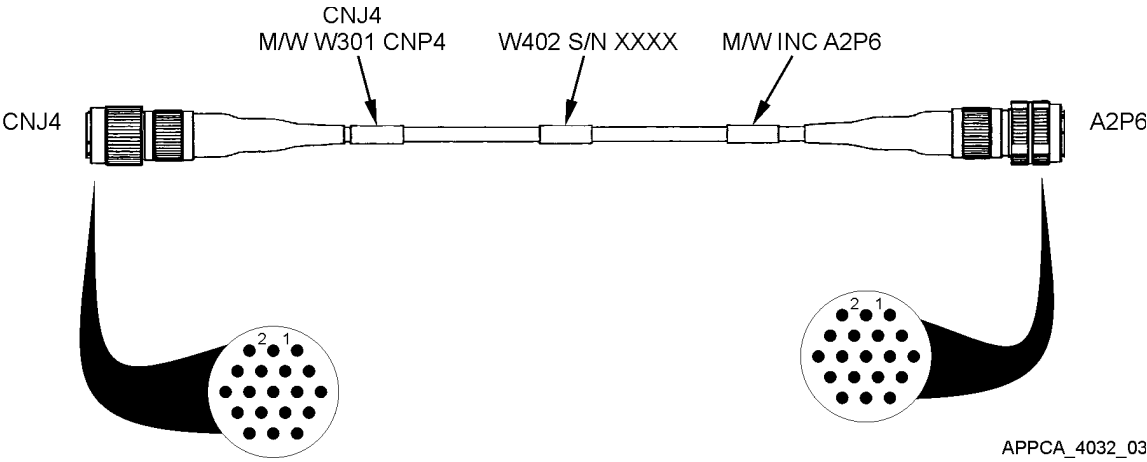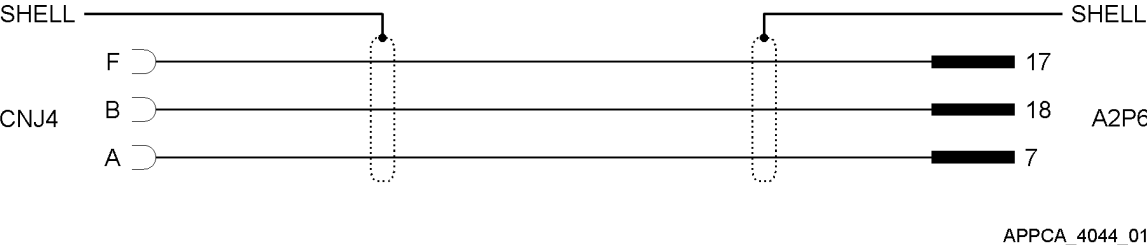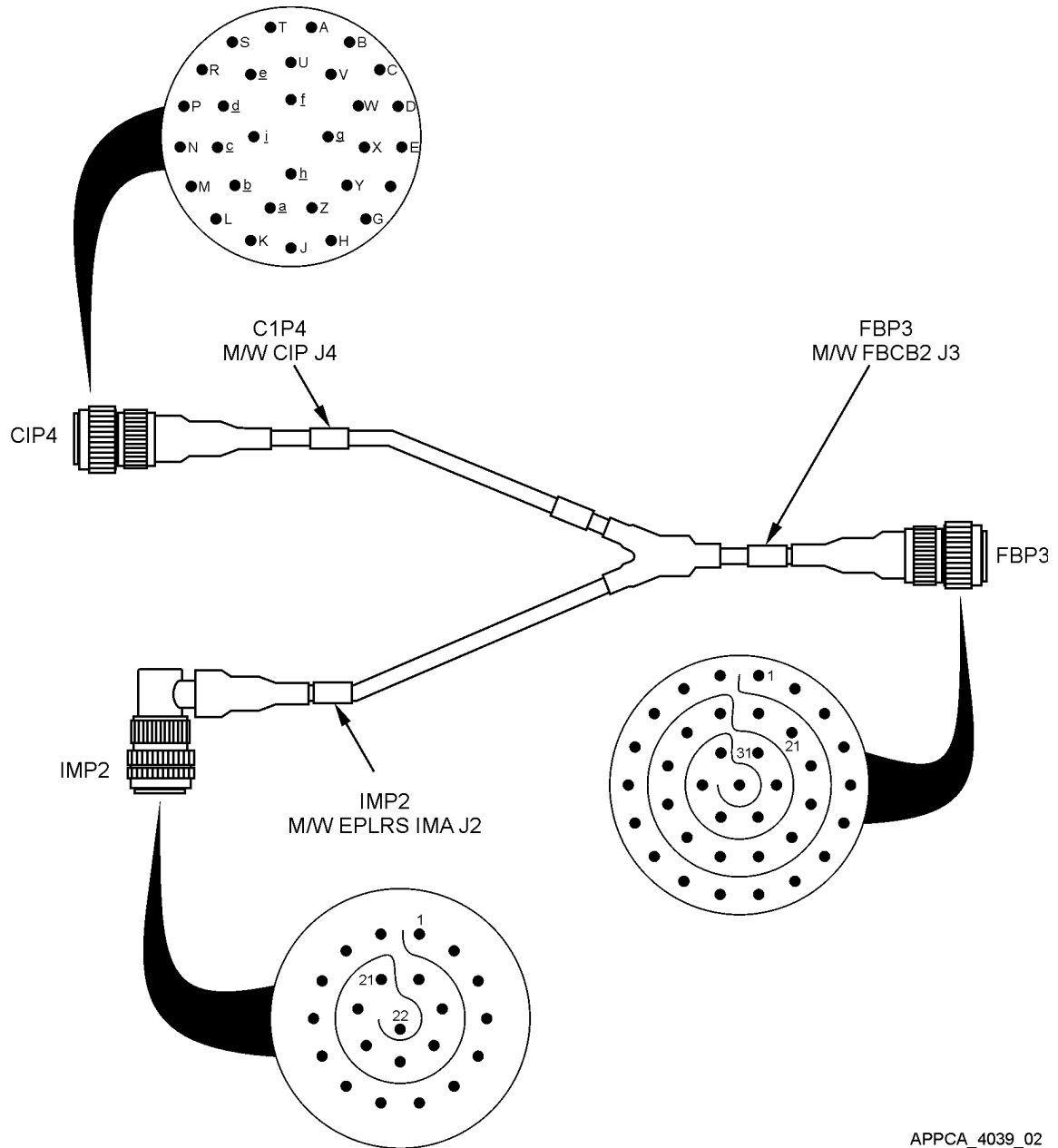   E   F

                                                   E2
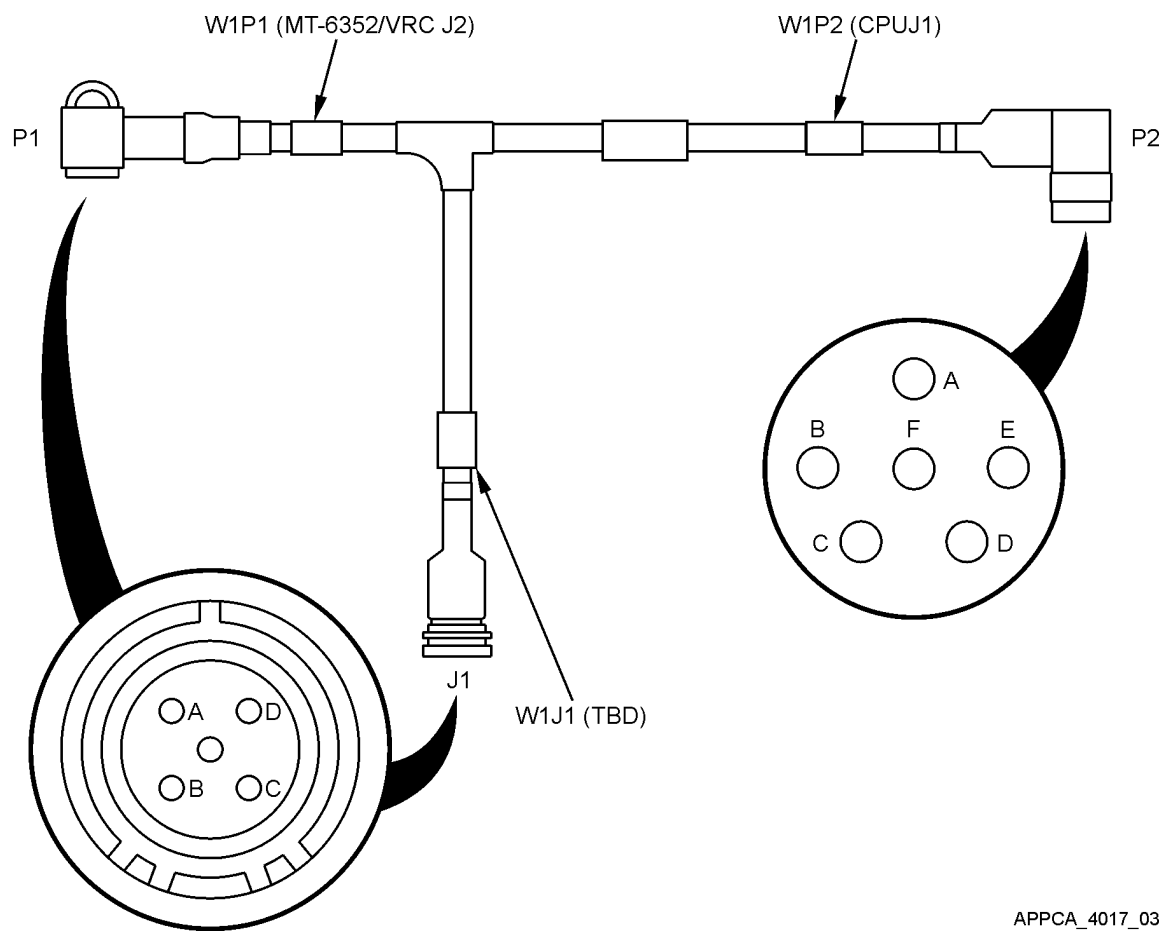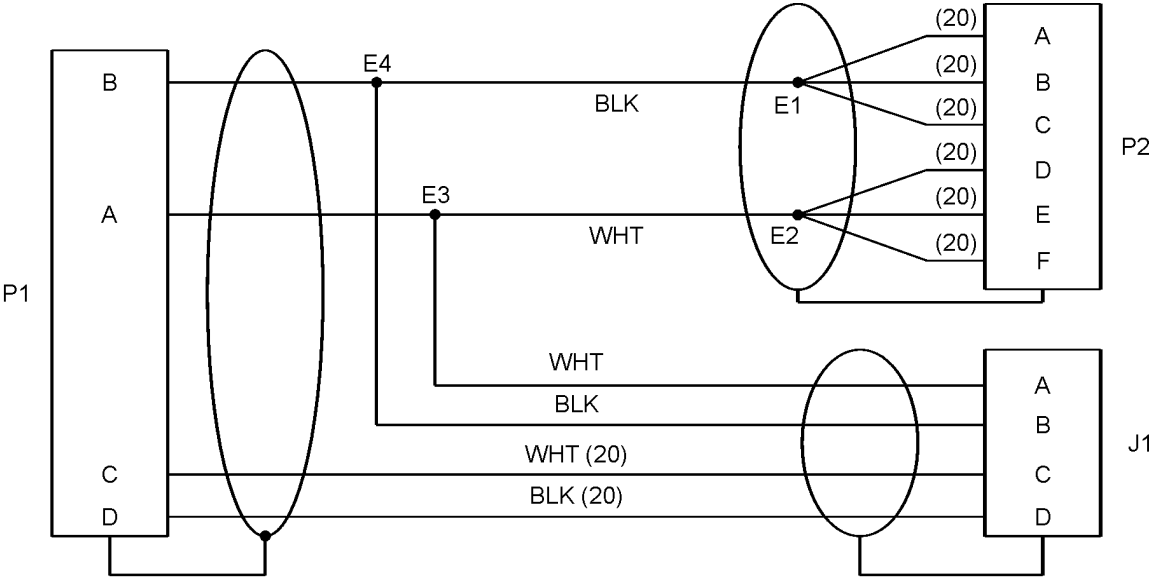
WIRING DIAGRAM   APPCA_4027_01
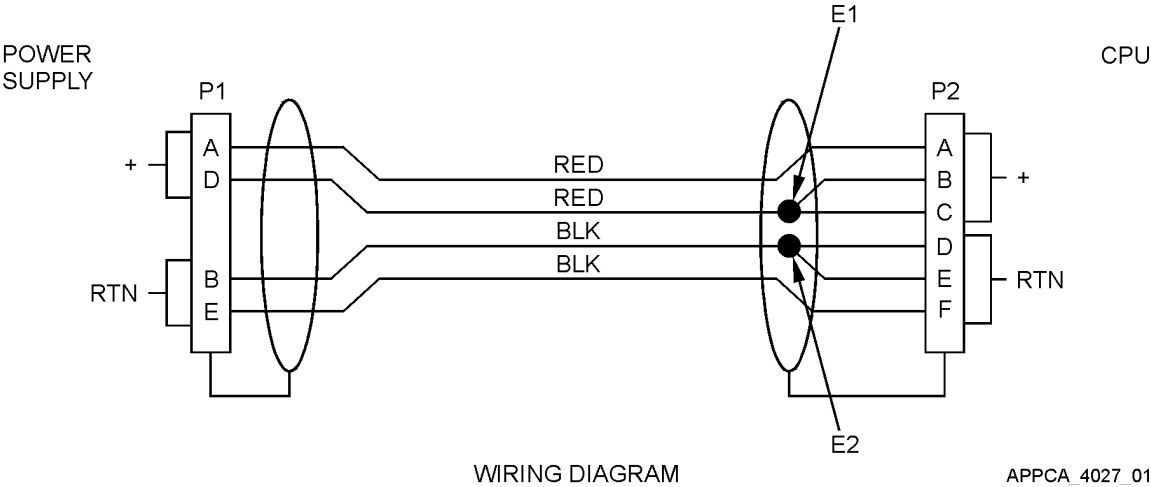
Figure 30   **P/N 881321 W1D Wiring Diagram (SICPS Tent)**

W1E-P1 (P/S-J4)   W1E-P2 (PLGR-J4)

FUSE HOLDER

P1

P2

+

−

APPCA_4014_02
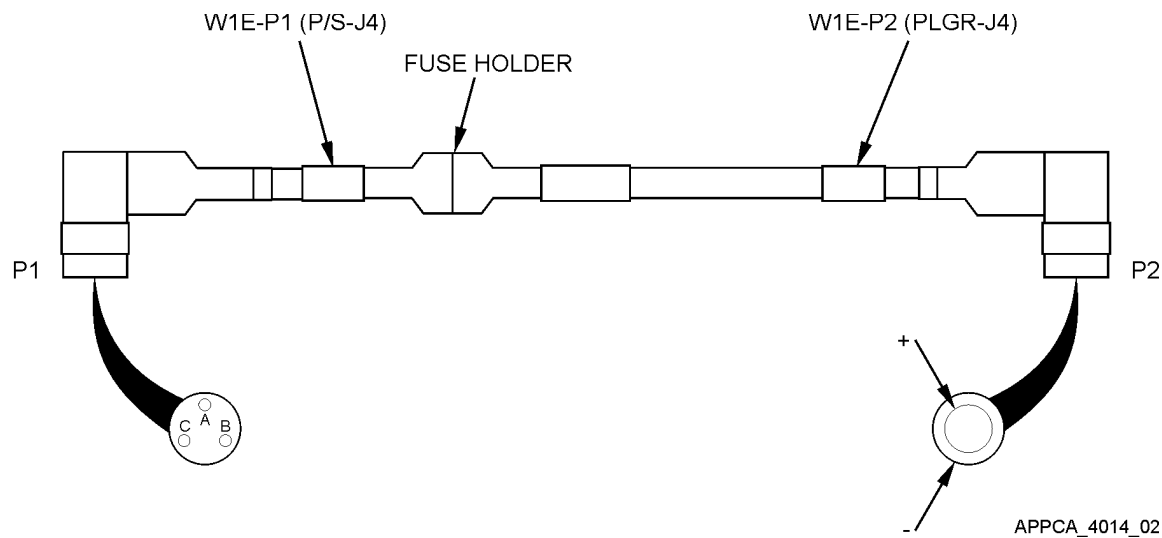
Figure 31   **P/N 881326 W1E Cable Assembly (SICPS TENT)**

POWER
SUPPLY

PLGR

P1

P2

+ | B

WHT +32V

+

RTN | C

RED 32V RTN

RTN

APPCA_4028_02
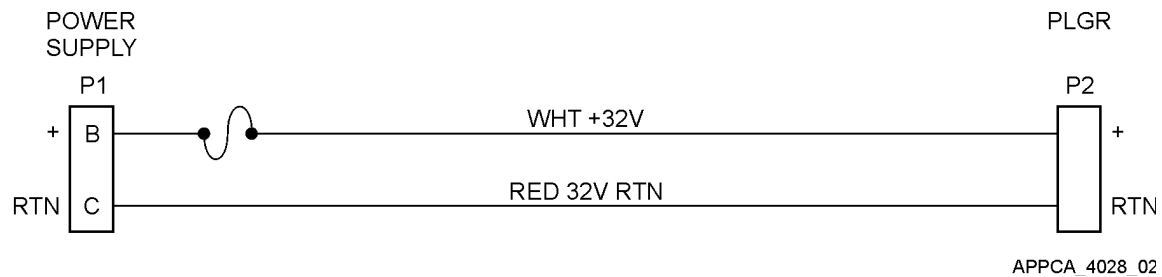
Figure 32   **P/N 881326 W1E Wiring Diagram (SICPS TENT)**

C1P7
M/W CIP J7

3A768/44350060
W400 S/N XXXX

FBP1
M/W FBCB2 J1

C1P7

FBP1

APPCA_4030_02
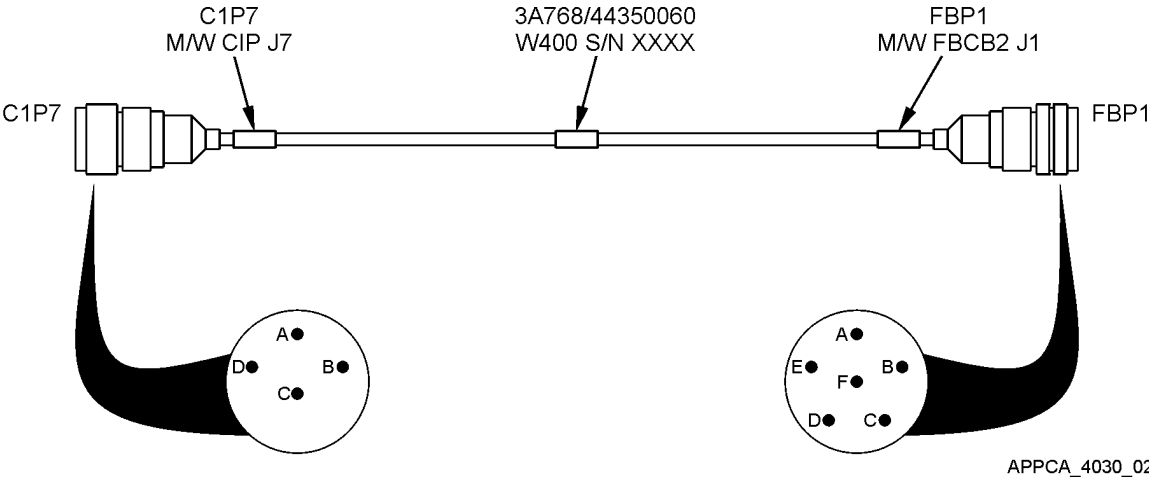
Figure 33 **P/N 443-50060 W400 Cable Assembly**

SHELL

SHELL

CIP7

A

C

FBP1

A

D

B

C

E

F

M27500-16ML2508

APPCA_4046_01
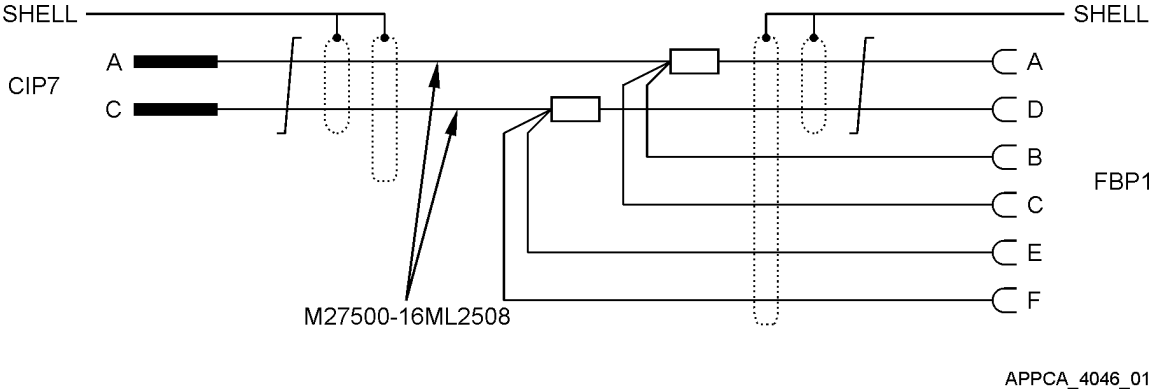
Figure 34 **P/N 443-50060 W400 Wiring Diagram**

90°

FBP6 M/W
FBCB2 TCIM

W401 S/N XXXX

IMP2 M/W
EPLRS IMA J2

IMP2

FBP6

5   1
6
4   2
3

1
21
22
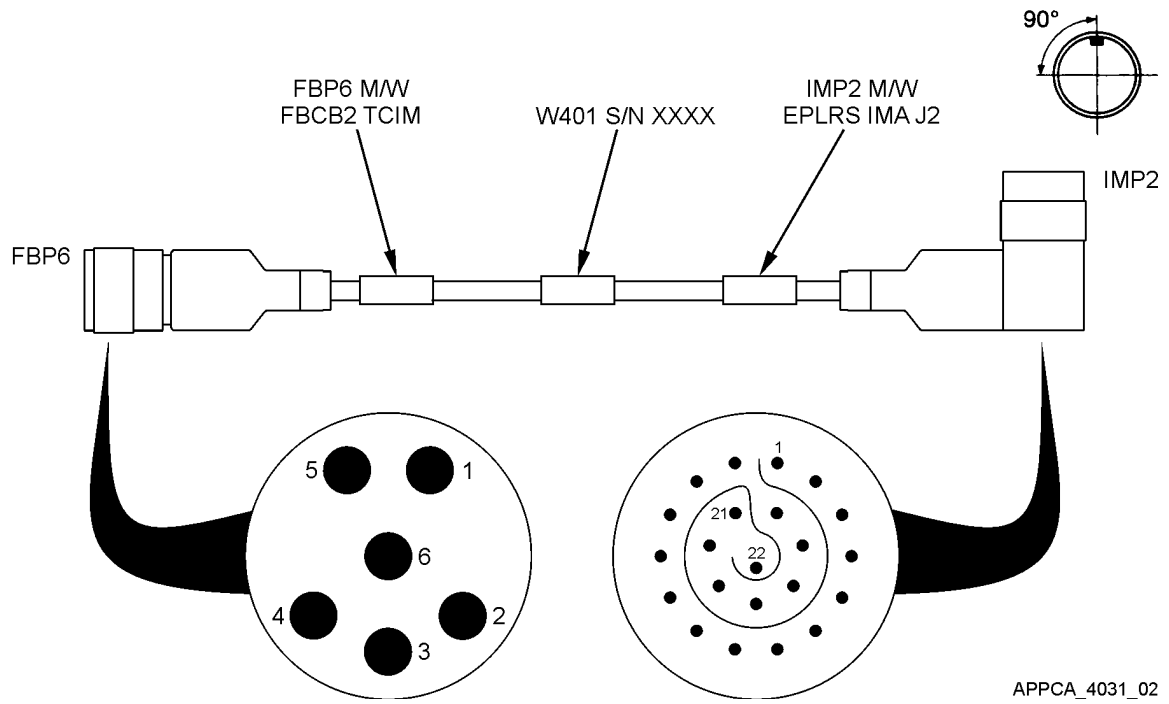
APPCA_4031_02

Figure 35   **P/N 443-50061 W401 Cable Assembly**

SHELL   SHELL

1   9

2   10

FBP6   IMP2

3   12

4   13
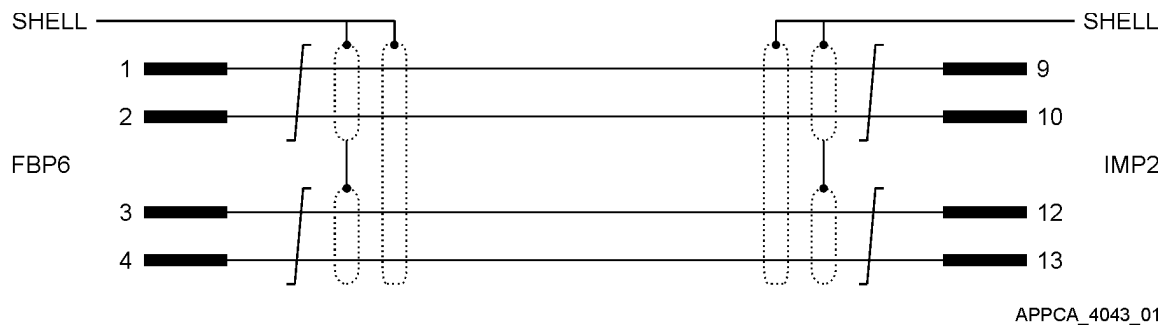
APPCA_4043_01

Figure 36   **P/N 443-50061 W401 Wiring Diagram**

CNJ4
M/W W301 CNP4   W402 S/N XXXX   M/W INC A2P6

CNJ4   A2P6

2 1   2 1

APPCA_4032_03

Figure 37   **P/N 443-50062 W402 Cable Assembly**

SHELL   SHELL

F   17

CNJ4   B   18   A2P6

A   7

APPCA_4044_01

Figure 38   **P/N 443-50062 W402 Wiring Diagram**

Figure 39   **P/N 443-50063 W403 Cable Assembly**

SHELL ———————————————————————————————— SHELL

C ▬▬▬ ———————— 22 AWG ———————— ⊂ 13

B ▬▬▬ ———————— 22 AWG ———————— ⊂ 14

CIP4   D ▬▬▬ ———————— 22 AWG ———————— ⊂ 35

└ 22 AWG ———————— ⊂ 28

G ▬▬▬ ———————— 22 AWG ———————— ⊂ 1

H ▬▬▬ ———————— 22 AWG ———————— ⊂ 2

K ▬▬▬ ———————— 22 AWG ———————— ⊂ 3

SHELL ————————————————————————————————   FBP3

9 ⊃ ———————— 22 AWG ———————— ⊂ 16

IMP2   10 ⊃ ———————— 22 AWG ———————— ⊂ 17

12 ⊃ ———————— 22 AWG ———————— ⊂ 18

13 ⊃ ———————— 22 AWG ———————— ⊂ 29
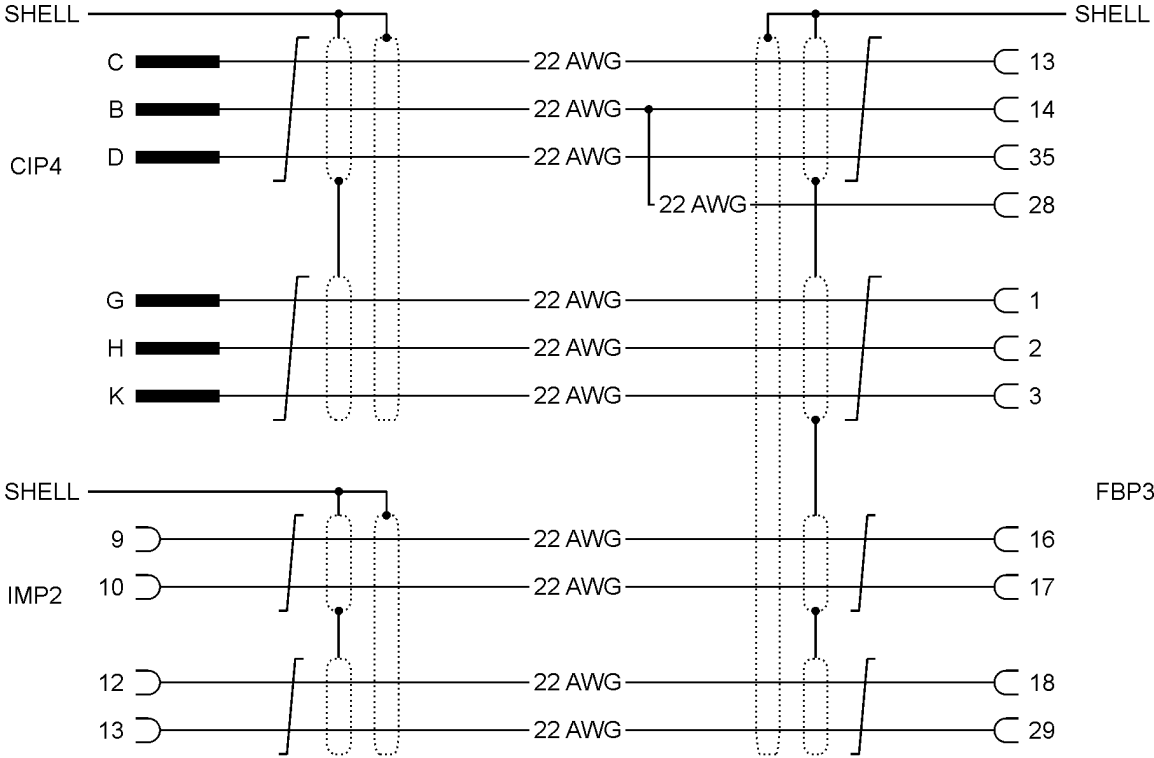
APPCA_4045_01

Figure 40   **P/N 443-50063 W403 Wiring Diagram**

Figure 41   **P/N 866004 W1 Cable Assembly**

APPCA_4037_01

Figure 42   **P/N 866004 W1 Wiring Diagram**

W3M-P1 (SIAD-J5)   W3M-P2 (MICAD-UIU 5)

P1   P2

APPCA_4013_05
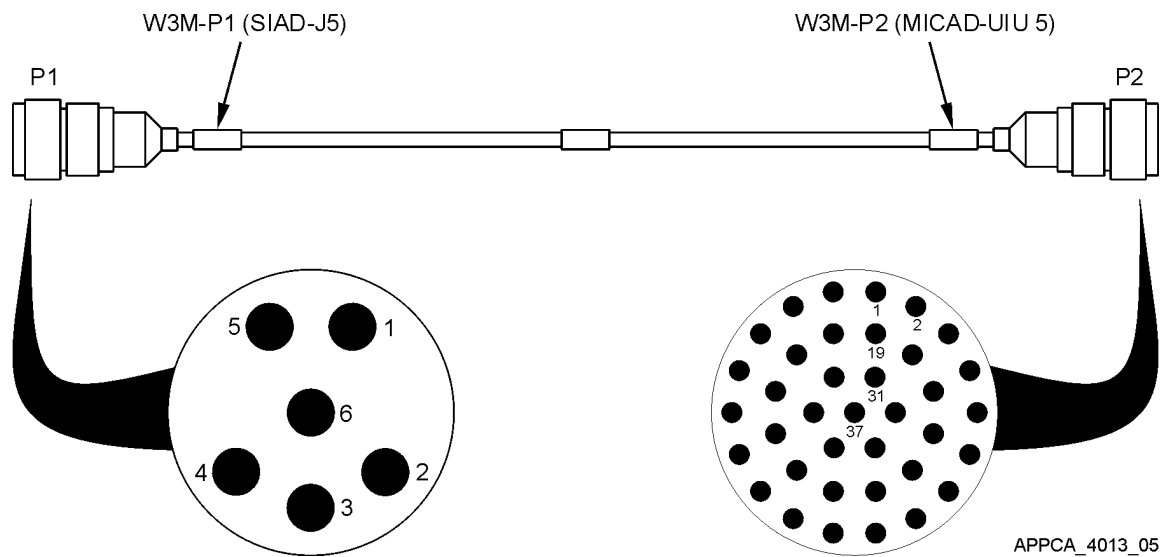
Figure 43 **P/N 881331 W3M Cable Assembly**

SIAD-J5   MICAD-UIU 5

TX	1		37	RX
GND	2		8	GND
	3		20	
	4		23	
	5		24	
RX	6		31	TX

P1   P2

APPCA_4073_02
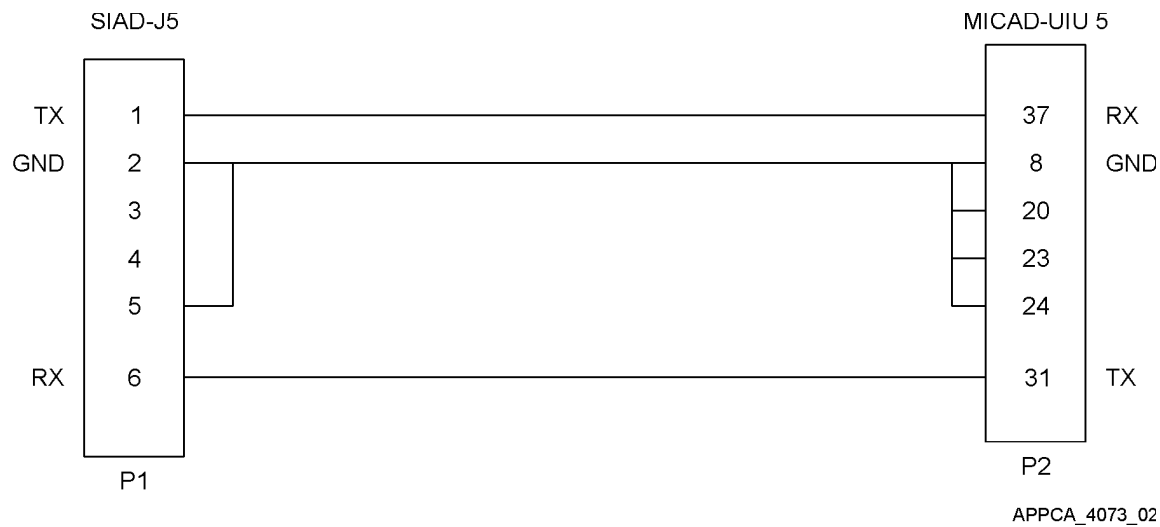
Figure 44 **P/N 881331 W3M Cable Wiring Diagram**

W6-P1
(TENT BULKHEAD)

W6-P2
(DISPLAY-J2)

P1

P2

5 1
6
4 2
3

5 1
6
4 2
3

APPCA_4008_03
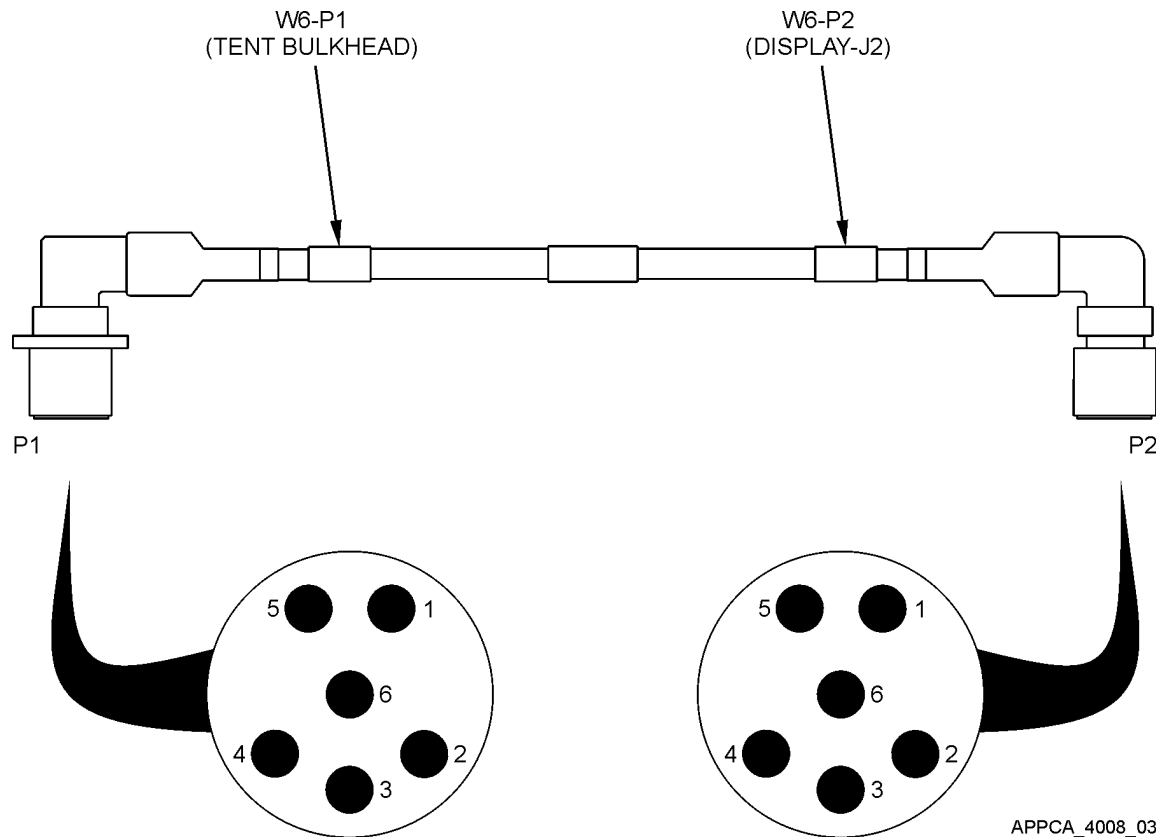
Figure 45   **P/N 881289 W6 Cable Assembly**

BULKHEAD

KEYBOARD
CONNECTOR

P1

P2

USB SIGNAL GND	1	GRN	1	
RESERVED	2	BLU	2	
RESERVED	3	ORG	3	
USBD-	4	WHT	4	
USBD+	5	BLK	5	
USB+5V	6	RED	6	
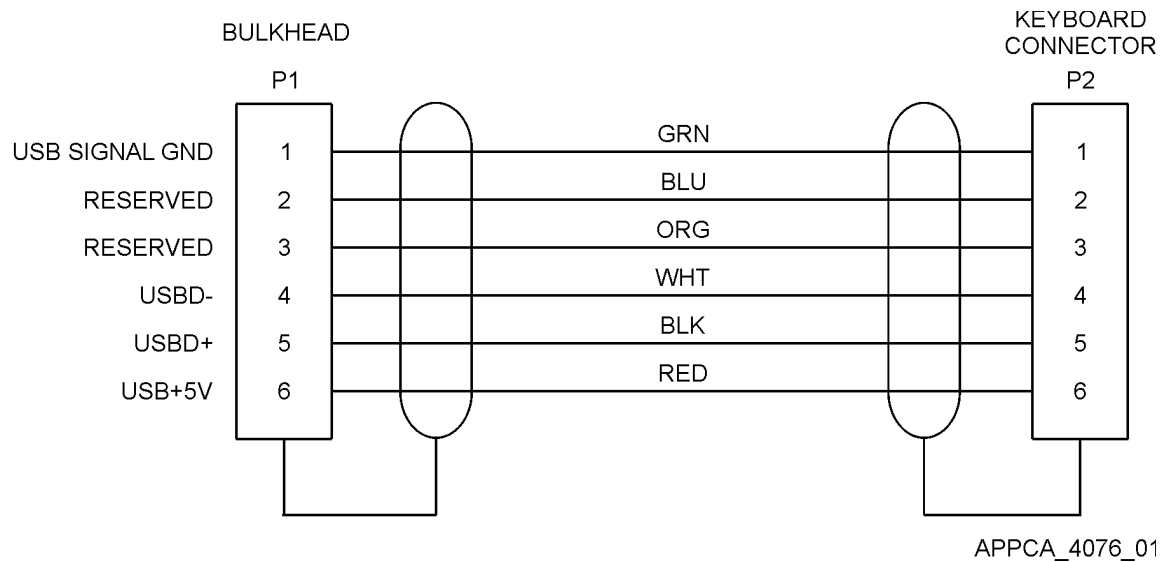
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Figure 46   **P/N 881289 W6 Wiring Diagram**
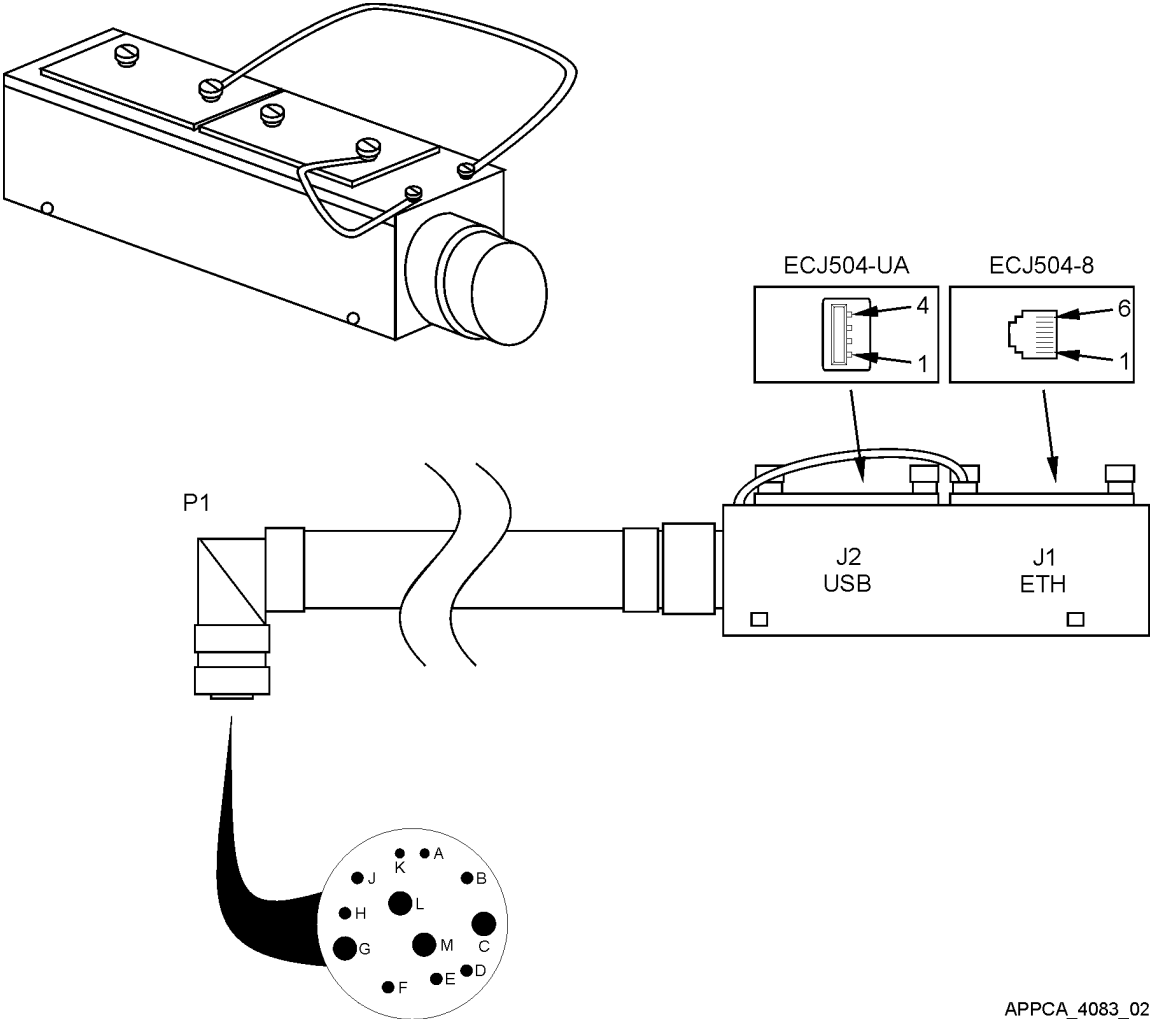
APPCA_4083_02

Figure 47   **P/N 881288 W5 EIAD Cable Assembly**

GRAY

J2

P1

		BLACK	GREEN	5	
USB D+	A	BLACK	GREEN	3	USB D+
USB D-	B	BROWN	WHITE	2	USB D-
USB V BUS (+5V)	K	RED	RED	1	USB V BUS (+5V)
USB GND	F	ORANGE	BLACK	4	USB GND

J1

LAN TX+	J	BLACK	BLUE	1	LAN TX+
LAN TX-	H	BROWN	ORANGE	2	LAN TX-
LAN RX+	D	RED	BLACK	3	LAN RX+
LAN RX-	E	ORANGE	YELLOW	6	LAN RX-
			RED	4	
	NOT		GREEN	5	
	USED		BROWN	7	
			BLACK	8	

APPCA_4006_02
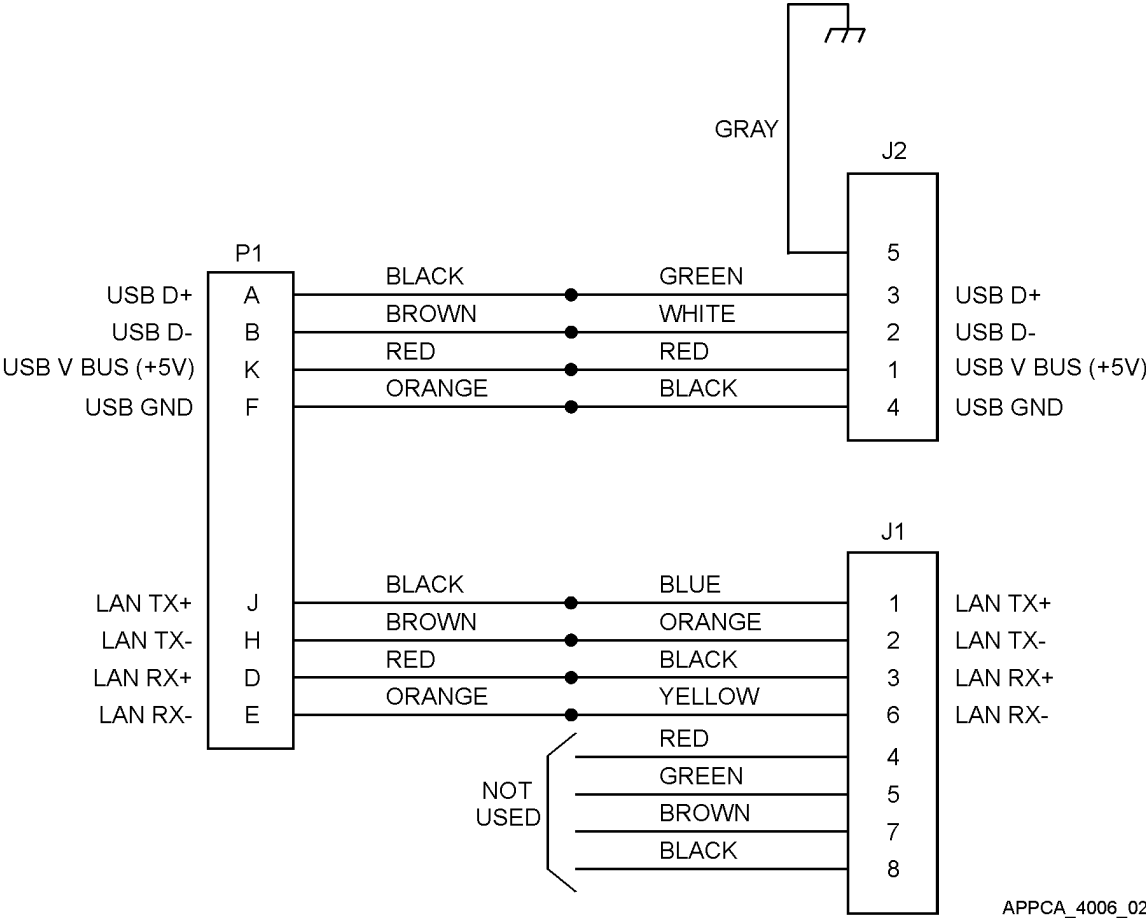
Figure 48   **P/N 881288 W5 EIAD Wiring Diagram**

W4P1 (CPUJ2)   W4J1 (HEADSET P1)

A
B
E
C
D

J1

P1

1
2
10
11
3
12   13   9
4   8
5   6   7

A
B   E
C
D   P2

W4P2 (C-2298)

APPCA_4025_03
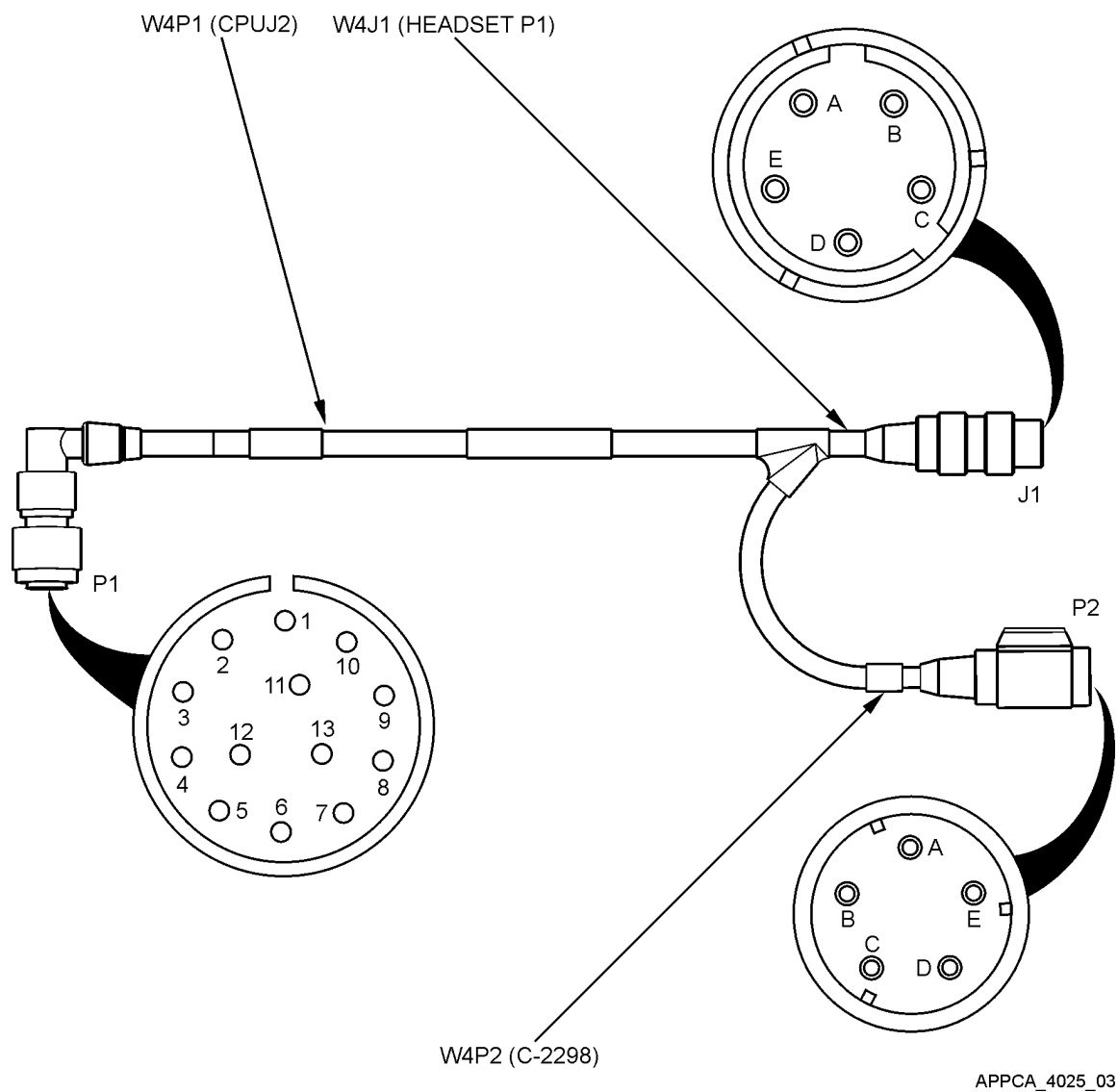
Figure 49   **P/N 881263 W4 Cable Assembly**
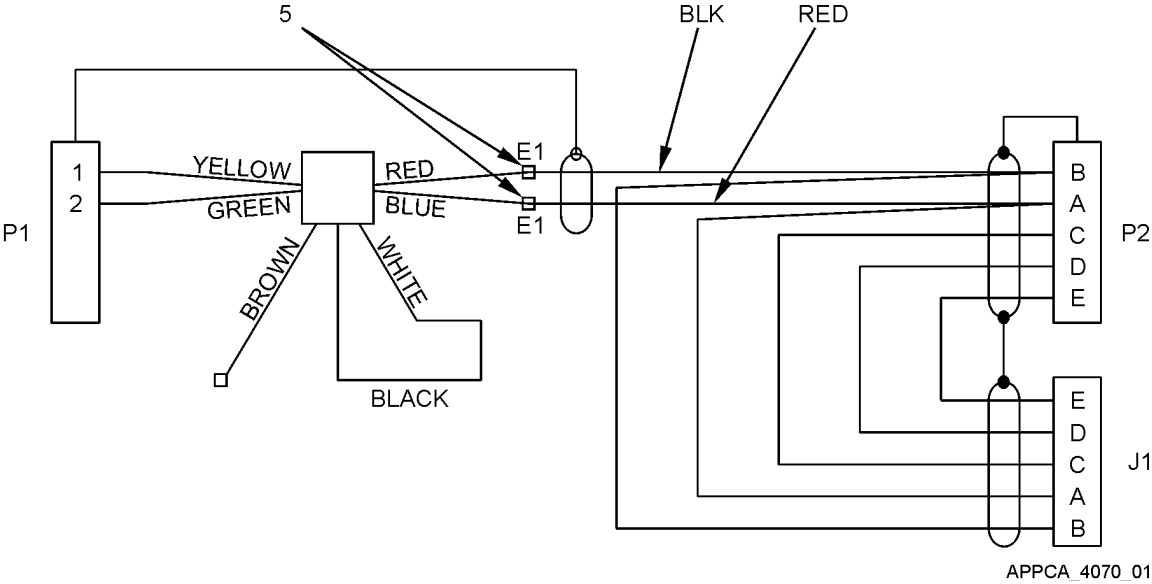
Figure 50　**P/N 881263 W4 Wiring Diagram**

W1-P1 (PCU-J8)

W1A-P2 (CPU-J1)

P1

P2

J1

W1-J1 (W27-P2)

A●
E●   B●
F●
D●   C●

●L ●A

●K ●M ●N ●B

●J ●T ●U ●P ●C

●H ●S ●R ●D

●G ●F ●E
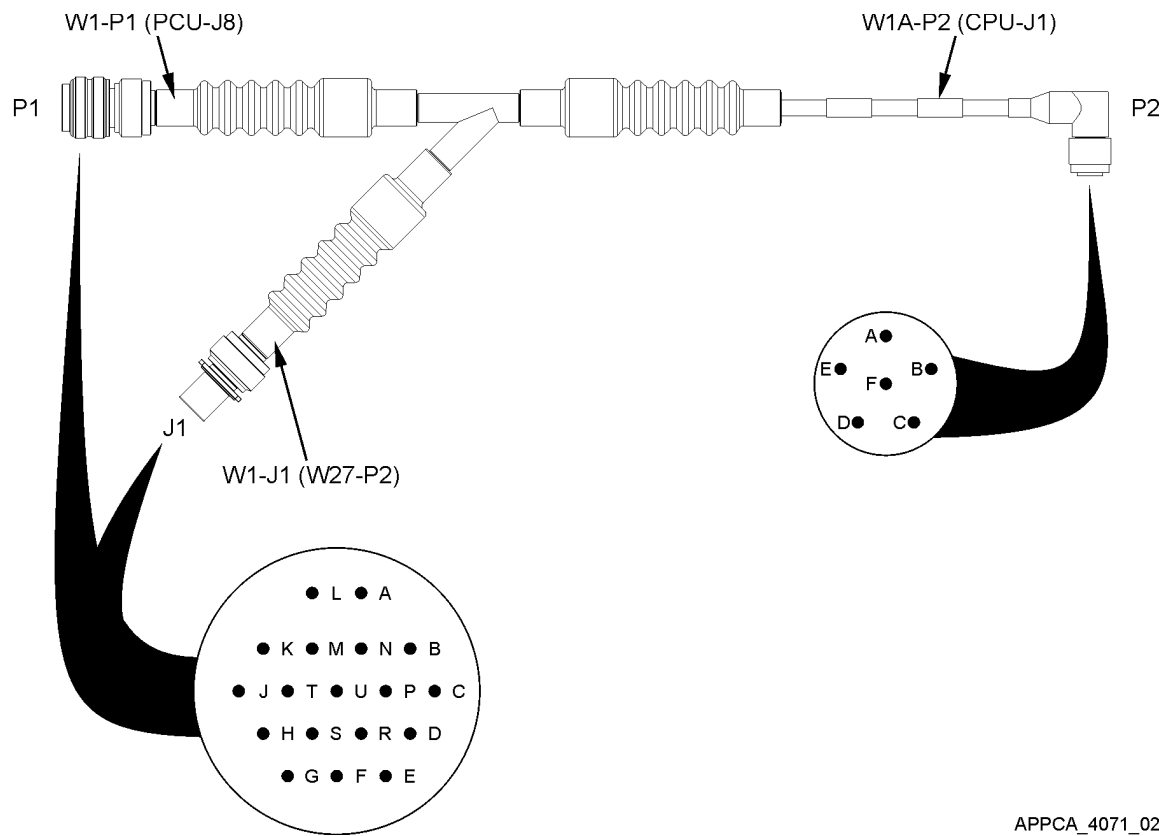
APPCA_4071_02

Figure 51   **P/N 881279 W1 Power Cable Assembly**
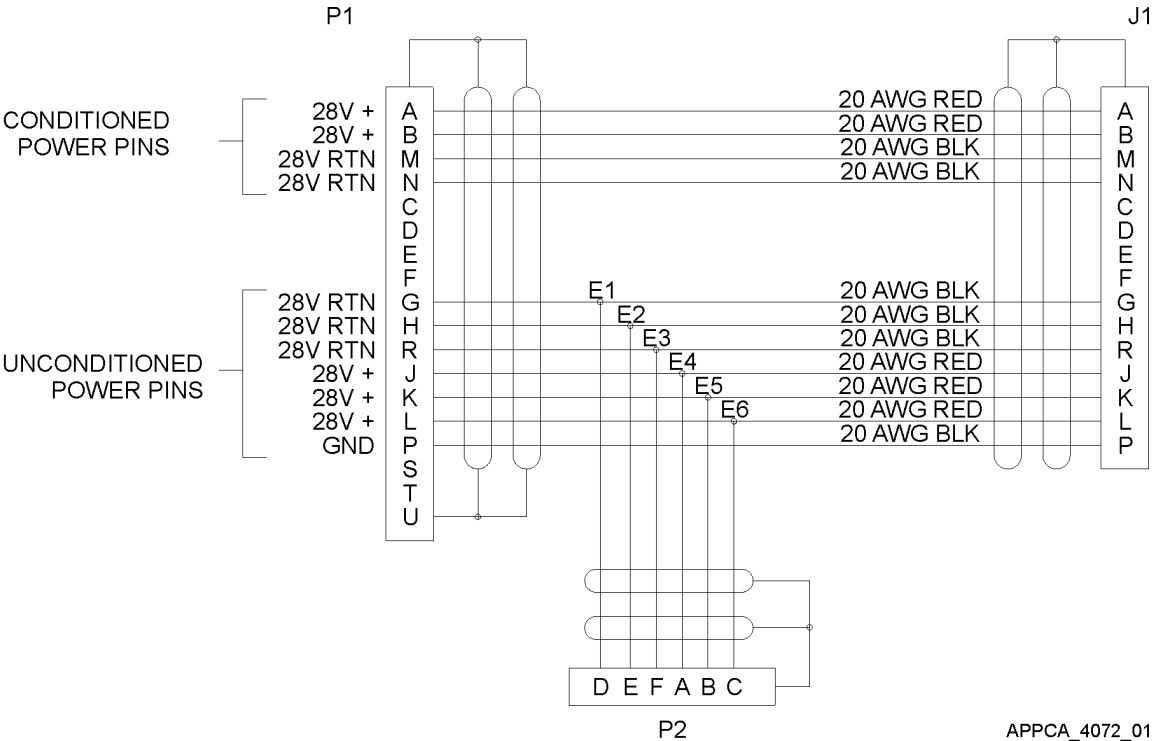
Figure 52   **P/N 881279 W1 Power Cable Wiring Diagram**

INDEX

INDEX–Continued

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Ft. Hood, TX 76445

DATE SENT 16 July 2001

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-7010-326-20&P	07 September 2001	Operator's Manual Computer Set, Digital AN/UYK-128(V)

BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	
1-3	1-1.2			The RHDDC is discussed in the paragraph but is not shown in the illustration. Need to illustrate the RHDDC.
2-14		2-10		Figure 2-10 shows task bar labeled toward bottom of illustration. Unclear whether task bar is a button or whole bottom bar.
3-10			3-1	Table 3-1, step 12. Add RHDDC to list of components that needs to be present and inspected to ensure no damage after mission is completed.

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Fort Monmouth, New Jersey 07703-5006

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PENDING

FBCMI_4018_01

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE
1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS
1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 lb.
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE
1 Millimeter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Millimeters = 32.82 Fluid Ounces

SQUARE MEASURE
1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Inches
1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

CUBIC MEASURE
1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches
1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

TEMPERATURE
$5/9(°F - 32) = °C$
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32.2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
$9/5 °C + 32 = °F$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters-Meters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621